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THE speech of President McKinley at Buffalo is of transcendent importance to business interests, as indicating the probable course of the Republican party in regard to legislation affecting such interests. If the Republicans are wise enough to consult, from time to time, the needs and wishes of the great majority of the people, there is little danger that any administration representing the Chicago platform will be installed in Washington during the present generation; and Mr. McKinley's address indicates that the most influential and popular man in his party, if not in the country, is determined that Republicanism shall not sink into indifference to the changes in popular needs and popular sentiment. That the public generally believes that tariff taxation, in behalf of American industries, becomes unnecessary and objectionable when the industries so protected have become so powerful, in consequence of such protection, as to be able to sell their products in foreign markets in competition with foreign goods, and at prices lower than those which their customers at home are compelled to pay, may be regarded as certain, and Mr. McKinley would be thoughtful enough, and sincere enough, to understand the reasons for this belief, and to try to correct the abuses of excessive and long-continued protection, even without the support of the large section of the Republican party which has come to hold these views. It may be taken for granted that our good President never felt the delight that some of his supporters expressed in the distresses of the starving button-makers in Vienna or the tin-plate workers in Wales, deprived of employment by the American protective tariff; and his clear comprehension of the importance of protecting our own people in such a way as not unnecessarily to injure others is likely to be of incalculable value to the country.

IT is rather amusing to observe how rapidly the sentiment in favor of preserving and enlarging the forest-area of the United States has spread within a few years. Some of its manifestations are not too rational, and a professional forester, invited to meet one of the amateur forestry associations which are springing up everywhere, found that the idea of most of the members was to prohibit all cutting of timber in the district which it had under its care. It is hardly necessary to say that forestry has in mind the obtaining of revenue from wooded lands, and that its processes are directed toward making this revenue as large as it can be made without diminishing its permanency. Few people realize, even now, how much can be accomplished in this way, many forests now yielding an annual income of several hundred per cent on the original investment. As we have repeatedly observed, the greatest obstacle in the way of the practical utilization, for forestry purposes, of lands now waste is to be found in our methods of taxation, by which any man, or any corporation, undertaking a forestry scheme as a business operation, is virtually sure to be ruined before the investment brings in any income.

IT is strange that our New England town-assessors, who have, to a great extent, the business interests of their communities in charge, do not see the enormous advantage that there would be in encouraging forest-planting by temporary exemption from taxation of the land so planted, under the system which has brought wealth to Germany. The amount of tax collected on waste lands, suitable for forestry, but for nothing else, is, in New England, very small, yet the aggregate tax, with compound interest added, for the forty years which must elapse before a forest begins to afford a return, is quite enough to deter a prudent man from embarking in such a venture. On the side of the town, which is not allowed to lay up money at interest, nothing is gained from the tax except a few dollars, to be divided among the annual town-expenses, a very appreciable portion of which, in most New England towns, is incurred for the maintenance in almshouses of those who have been land-owners and taxpayers, and, under a more enlightened system, might have been contributors to the public funds, instead of being a public charge; while, if the reclamation of such lands were encouraged, as it is in Germany, by thirty years exemption from taxation, experience shows that, at the end of that time, the property would bear reasonable taxation, and that, a generation later, the annual income from it would be so large that an annual tax from five to ten times as great as that imposed upon it in its undeveloped condition would be easily borne; and, in the meantime, the community, far from suffering a simple loss of taxes, would be benefited, to an extent incomparably beyond its loss, by the influx of capital from outside, the employment of its citizens in the planting and management of its new forests, the building of houses, and the other incidents of a new and important industry.

THE recent decision of the English House of Lords, holding the funds of labor unions liable for damage caused by the official action of the unions, although only delivered on the twenty-second of July, has already had an important effect. The Taffvale Railroad Company has begun suit against the Amalgamated Society of Railway Servants for one hundred thousand dollars damages, incurred by the unlawful action of the Society during the strike of last year; and the Blackburn branch of the Weavers', Winders' and Warpers' Association has been served with papers in connection with a strike in a factory. The President of the Trades-Union Congress finds the situation "intolerable"; and a committee has now under consideration the subject of finding some legal means of protecting the funds of unions from attack. It is not very likely that the committee will succeed, as the principle on which the decision of the House of Lords was based, that labor-unions should pay for the damage that they caused, in the same way that corporations and private individuals do, is so obviously fair that public opinion will sustain the courts in preventing its evasion; and it may be hoped that the workingmen themselves will accept the law, as now settled, with confidence in its ultimate advantage to their interests.

MR. MORGAN is said to have announced that hereafter, in the iron manufactories which he is concerned in directing, no contract or agreement will be made with any body of workmen which is not incorporated, the reason given for this being that, as the funds of a corporation are liable for its debts, including damages due to failure to fulfil contracts, a guaranty of this kind is necessary to hold to their agreements men who, as the events of the past month have shown, do not hesitate to repudiate them at the order of a labor leader. As was said just above, it has already been held in England that the funds of labor unions are liable for damages caused by the action of the unions, whether the latter are incorporated or not, the theory of the courts being that, as the unions are permitted, under English law, to enforce liability for damages on other people, they must themselves be held to similar liability; but the point has never been authoritatively settled in this country, and Mr. Morgan is justified in insisting, now that he is in a position to do so, that working-men and their employers shall be equally responsible for their acts before the law. The labor-leaders are reported as being very gloomy over the prospect of having the funds entrusted to them held liable for the consequences of their actions, to say

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nothing of the annoyance of being compelled to keep books, and account to the State officials for their receipts and disbursements; but there can be no doubt that nothing could be done which will benefit working-men more than the establishment of such responsibility. A workman whose fidelity to his obligations is permitted to depend on the whims of walking-delegates is only half a man, while an association of men who depend upon their numbers to avoid responsibility is simply a mob; and the first step in the "enfranchisement" of labor, about which we hear so much talk, is to stop treating working-men as irresponsible babes, and to exact from them the same faithfulness to their promises which they are legally entitled to claim from their employers.

AN interesting phenomenon in labor economics was shown a few days ago in New York, where the walking-delegate of a bricklayers' union was brought into court on a charge of extortion. The complainant was a contractor, who deposed that the walking-delegate appeared one morning at a building which he was constructing, and ordered all the bricklayers to strike. They obeyed, and work was suspended until early in the afternoon, when the walking-delegate again made his appearance, and informed the contractor that, if he would give him twenty-five dollars, he would allow the bricklayers to go on with their work. The contractor gave him a check for twenty-five dollars, and then notified the police, who followed the delegate to a saloon, where he ordered drinks, paying for them with the check, and receiving the change in cash. The delegate was represented in court by counsel, who explained the matter by saying that the contractor owed one of his bricklayers for forty-eight hours' work, and that he was directed by the union to collect the debt. Of course, it is quite possible that this may be true, but it is singular that a man's wages for forty-eight hours should amount to just twenty-five dollars, and, supposing this to be the fact, the delegate has still to explain why he should spend for drinks a portion of the money collected by him for some one else; while, if the debt to be collected was less than twenty-five dollars, it was certainly an act of extortion to demand more from the contractor.

WE mentioned last week, for the benefit of architects and other amateur photographers travelling abroad, that it is very desirable for such persons to have their films developed out of the United States, in consequence of the new ruling of the United States Post-office Department, which imposes a penalty of double the foreign-letter rates on exposed films sent through the mails to this country, where the films are secured with gum or gummed paper, or by any other method which will hinder the postmaster from unrolling them, to see whether there is any writing on the sensitive film. It appears, however, that this is not all. Even where the roll of film is left open to the inspection of any one who may take a fancy to examine it, and whatever may be the postage paid on it, or even where the amateur brings it home in his trunk, it has been recently decided that it is liable to a customs duty of twenty-five per cent, *ad valorem;* and in addition to this an internal-revenue tax of twenty-five cents must be paid on the entry and declaration which the consignee must sign before he can get the film. The fact that the film was manufactured and purchased in this country makes no difference, the duty being imposed indiscriminately on all films, without regard to their origin. Suppose, for example, a tourist to take with him from this country an ordinary Eastman film costing ninety cents, for twelve exposures, four inches by five, and, after taking twelve pictures on it, to secure it with the gummed strip packed with it for the purpose, and carry it to any post-office outside the United States for transmission home for development. He will be told, if he asks, that twenty centimes or two-pence, as the case may be, will fully prepay the postage, and he affixes stamps to that amount, and mails the package, imagining that it will reach its destination quickly and safely.

INSTEAD of this, the next incident in the affair is the receipt by the person in the United States to whom the film is sent of a notice requiring him to appear at some post-office, not always that nearest his residence, and pay from sixty-two to sixty-five cents extra postage on each film for the benefit of the Post-office Department; while the Customs Department sends an independent summons requiring him to appear and pay a duty of twenty-five cents on each film, the appraisers estimating the value of such things liberally, besides an internal-revenue tax of twenty-five cents on the declaration; and the unfortunate consignee must appear, sign the official documents, and pay a dollar and twelve or fifteen cents on each film before it will be delivered to him. If the amateur has used six-picture films, costing forty-five cents, which are convenient and popular, the postage charge will be practically the same as for those with twelve pictures, the difference in weight between the two kinds being a mere trifle; the internal-revenue tax will be the same, and the customs duty will, in all probability, be the same; or, if the consignee can get the ear of the appraiser, and convince him of the real value of the film, he may be able to get it reduced to twelve or thirteen cents, making a total of one dollar or more charges on a forty-five cent film. The obvious moral of this is that the films used by tourists should not only be developed, wherever possible, outside the United States, but should be purchased there also, inasmuch as good films can be bought abroad for less than the price asked here; and, as the duty is charged on the cost, without regard to the place where the films are made, the cheaper film is liable to a smaller duty. A very good celluloid roll-film, rather better, according to our experience, than the American-made Eastman film, and very much superior to the Eastman films made in London, which are greatly afflicted with the so-called "lightning" scratches, finger-marks and other defects, is manufactured in Lyons in sizes exactly corresponding to the American films, and wound on spindles which fit any of the ordinary roll-film cameras, and is sold very extensively throughout Italy and in establishments elsewhere which keep the Lumière and other French photographic goods; and several English roll-films have recently been put upon the market. We must confess that long familiarity with the American-made Eastman film has made us, personally, very partial to it, but if American travellers, and particularly professional men and students, with whom economy is a necessity, are to be subjected, in attempting to use American films and to employ Americans in developing them, to such monstrous extortion as that involved in these recent rulings, they must escape as best they can.

THE mishaps, as well as the successes, of the Santos-Dumont air-ship have attracted the attention of the public in an unusual degree to the subject of the navigation of the air. Although so well studied in detail as to have been more successful in operation than any other machine of the kind yet constructed, the Santos-Dumont balloon does not differ in type from the Renard-Krebs, and many others, the floating portion consisting simply of a cigar-shaped balloon, of varnished silk, holding suspended a skeleton car, which carries a powerful gasoline motor. This motor drives a propeller, fourteen feet in diameter, of varnished silk, stretched over a steel frame, and a rudder, of similar construction, is suspended between the balloon and the car. When the wind is light, the machine can be manœuvred very successfully, but it seems to be entirely uncontrollable in a high wind. The whole construction is extremely light, the car being suspended to the balloon by piano-wires, and every portion being reduced to the lightest framing compatible with the requisite strength.

IT is rather surprising that the competition for the Deutsch prize, which has called out the Santos-Dumont air-ship, as well as several others, which are not yet ready for trial, does not appear to have encouraged the partisans of the "soaring" type of machine for aërial navigation to an effort to capture, not only the prize, but fortune and fame. It must be confessed that the soaring-machines hitherto produced have not given very encouraging results, but it does not follow that they might not do so, if constructed on a larger scale, and the Deutsch prize, of twenty thousand dollars, is worth trying for. In some respects, the soaring-machines offer important advantages. As their capacity for soaring depends upon the motive-force employed, rather than on their bulk, it is possible to increase this without necessarily increasing proportionately the mass of the whole machine; while a floating machine, in order to obtain increased power, must increase the size of the inflated silk bag which serves to suspend it, and which is the most unmanageable and dangerous portion of the whole affair. Whether it will ever be possible to carry compressed or liquefied hydrogen on such machines, in such a way as to afford a means of lightening the labor of the motors in the soaring type, or giving better control over the floating portion in the balloon type, remains to be seen, but it seems as if the most promising field for future invention lay in this direction.

FIREPROOF-CONSTRUCTION IN PHILADELPHIA.[1] — II.

THE first use of hollow clay tile and iron beams in our city of which I can find any record is still extant in that pioneer modern office-building, designed by Mr. Addison Hutton, at Fourth and Chestnut Streets, and popularly known as the Wood Building. It was erected in 1881. The side-construction hollow terra-cotta arch floor-system produced by Henry A. Maurer & Son was used; no effort was made to cover the lower flanges of the beams, excepting with a coat of cement between the slight projections of the tiles, which received the mortar or plaster direct. The building is, of course, far from proof against fire; the posts and girders of iron are all exposed, an open stairway, an elevator-shaft, and an open light-shaft, extending from first floor to roof with a wood-trimmed sash inclosure all around the four sides, would turn the whole structure into a furnace with great promptness; but the building is, nevertheless, a step toward reducing dead-loads of fire-resisting floors to rational weight, which even at this day remains too high.

An American patent was issued to F. A. Peterson on hollow-tile floor-construction of burnt-clay and I-beams, or the equivalent of the latter in deck-beams or double channel-beams, as was actually used in one of the first buildings. The date of this patent is April 3, 1855; the beams were set but 2 feet 6 inches apart, and a single hollow tile filled the space between, projecting but slightly below the flanges of the I-beams; their introduction was not extended, and throughout the country little attention seems to have been given the subject until after the great Chicago fire, in 1871, when a limited number of floors were laid on iron beams and terra-cotta tiles both in New York and Chicago; but not until after the advent of the modern office-building — the first of the species being the Montauk Block, Chicago, in 1881, coincident with the construction of the Wood Building in Philadelphia — does the serious introduction of fireproof floors in business and hotel buildings seem to have obtained consideration.

This period was soon followed by the advent of the sky-scraper and the use of light, incombustible and strong floor and wall materials, for these were at once recognized as an imperative necessity. Philadelphia's first successes in this line, the Girard Trust and Drexel Buildings, the latter of which, erected in 1887, has a floor-system of steel beams and terra-cotta arches on an iron or skeleton frame, faced with white marble on the exterior and backed on the frame with hard bricks. It is, fortunately, situated among buildings in which fire-retarding or fire-resisting materials largely prevail, with much intervening space all around it, and is therefore, perhaps, as secure from damage by fire as any building in the city; with the marble envelope of its iron frame in a more exposed position, or in closer proximity to combustible buildings, the damage from an adjoining fire might be very great. From this period to the present time a great variety of fireproof-floor systems have been proposed, and a large number of them introduced into Philadelphia buildings. Limited time will permit a hurried consideration of a few only of the more favorably considered, together with some of the minor fireproofing building details and devices.

While the range of materials now recognized to be available for fireproofing purposes, either independently or directly, as the filling between floor-beams, for construction of the principal and minor subdivision walls, ceilings or roofs of fireproof buildings, or for the protection of the metallic members for the reception and transmission of the chief strains from the loading, both dead and live, and from storms and wind, has narrowed to a small list indeed, much ingenuity has been expended in devising varied forms and means for applying them, and in as varied combinations; we find in Philadelphia, for protection to skeleton-framing of some very high and important buildings, such combinations as bricks and limestone, bricks and granite, granite and marble, and, in a few instances, marble and granite alone. Of these, the bricks and terra-cotta alone can really be considered fireproof material, granite and marble cracking and crumbling badly under the action of heat, and with much greater violence upon the application of a hose-stream during a fire. The more recent structures, however, have been almost entirely constructed with brick and other forms of burnt-clay facings above the few lower stories, marble or granite work being, as a rule, confined to the entrances and facing of the ground floor, where, in event of a fire, the effects of heat would be least marked.

With reference to floor-systems in practical use, the varied forms and combinations of materials are much greater than those for exterior walls and coverings, the terra-cotta arch of hollow tile in itself having been used in not less than ten distinct forms for bridging between and protection of the lower flanges of the I-beam joists; besides which we have in use floor-systems, combinations of bricks, iron ribs and concrete, with wire-lath and cement-plaster ceilings for beam-protection, as in the Real Estate Trust Building and *North American* Building; or stiffened wire-lath and cement floor and ceiling beam-protection, as used in the Philadelphia Bourse; combinations of terra-cotta lintel and concrete, as used in the Lorraine Apartment House, Broad Street and Fairmount Avenue; expanded-metal and cement floor and ceiling protection, as used in the Gibson Building; iron rod or bar and cement floor-system with metal-lath and hard-plaster ceiling protection, as used in the Columbian Fireproof-floor System in the office and store building at Twelfth and Chestnut Streets. The cement arched-floor system, as used by the Vulcanite Company on permanent calcined-plaster centrings in the Stetson Mills and office, at Fourth Street and Montgomery Avenue, represents the combination of plaster-board-and-concrete fireproofing and beam protection, while the Keystone Plaster Company of this city, with works at Chester, has produced a fireproof floor-arch, using expanded metal in combination with specially treated calcined plaster cast into protecting skewbacks for the iron girders and floor-beams, and a single arch-block to be used between. It is probably inevitable that a field so attractive, from both a scientific and commercial standpoint, for experiment and profit as the fireproofing of buildings should lead to the proposing of many peculiar and almost freakish devices for the purpose, and many others which, by reason of the prohibitive cost, excellent though they may be, eliminate them from the competitive field of practical work.

One very worthy firm has offered the public a device for fireproofing wooden-joist systems by surrounding them entirely with concrete, for which purpose it was proposed to attach to either side of the wooden-joist angle-irons of such form as to lend the strength of its camber to both the joist and the concrete; in the light of what has been accomplished with concrete in combination with iron bars, or spans fully as great, it might be asked, Why use the wooden joists at all?

Terra-cotta ceiling-blocks and wire and metal lathing have been, and still are being, offered as a fireproofing for wood-construction. They can only be considered when of such proportion and quality and applied to such bearing members as ensure their stability both in the presence of fire and on the subsequent application of water under heavy pressure from modern fire-extinguishing appliances; indeed, the same is emphatically true of every fireproofing material worthy of serious consideration.

A comparatively new form of hollow-tile floor-system is now being introduced by Maurer & Son, clay and terra-cotta manufacturers, known as the "Herculean Fireproof-floor System," which, from the past success of the firm, and the reliable and standard character of all their former products, is worth careful consideration. Tests, both as to strength and fire-resistance, have shown — the latter in experimental cases only — very satisfactory results; it is perhaps the most nearly homogeneous terra-cotta floor-construction yet produced.

It consists of a series of end-construction, hollow terra-cotta tiles, varying in thickness from 6 to 12 inches, according to the span and weight to be carried. In plan these tiles measure 12 inches square, and along either side-joint, within a safe distance from the tops and bottom face of all tiles, runs a continuous L-shaped groove to receive in a cement joint a 2″ x 2″ rolled T-iron, which is made of the proper length to extend the full span of the floor-systems, from wall, or support, to support. The tiles are carefully set in place on wood support or so-called centring, the T-irons cemented into top and bottom of all joints, the tiles being carefully cemented throughout all joints as they are set, and the whole left to set up for a time; the end-blocks are given a bearing with T-irons of 4 inches on the supporting walls or girders. This system of terra-cotta construction demands more than ordinary care in setting; a large amount of iron beam-work is eliminated, and the T-iron ties, for they are only such, are so thoroughly protected by being embedded in the terra-cotta that no failure through the iron members can be considered probable.

I have examined some spans of this system of 20 feet clear, after being in place for a month; have noted the wonderful rigidity, natural elasticity, and other attractive qualities. There is in place now in a small building on Uber Street a floor of this form, 18′ x 20′, which I have had loaded with 600 pounds per square foot with very slight deflection. The strength of the floor is, of course, developed by the continuous character of the T-iron tiers and the compression of the top members of the terra-cotta blocks, with the possible tensile bond of the lower members reinforcing the same; exceptional care would seem to be necessary in the proper adjustment of all the joints and bearings, in fitting and cementing the various blocks of this floor in place, and it would seem of special importance that the cementing of the T-iron ties in the groove at side of the blocks should be of the very best material and executed without fault.

The terra-cotta floor-fireproofing in common use in Philadelphia is of two general forms; as used in the early practice and at this time where the ceiling finish is not a critical matter, it consisted of segmental arch of a hollow-tile skewback and a series of hollow-tile voussoirs, which are set between the rolled I-beams with cement joints, the back and haunches of these arches being filled above the I-beams with cement-and-cinder concrete, in which the floor nailing-strips are embedded at intervals of 16 inches, centres; the skewbacks in all the more recent cases form the beam protection. There are points of weakness in this form of construction, however, as the radial webs forming part of the joint are subjected to practically the same pressure as the top and bottom horizontal or arch webs, jeopardizing the tile; to overcome this difficulty, and for the purpose of affording a flat ceiling, the form known as end-construction arch is now almost universally used in terra-cotta floor-work. These are made up of bevelled-faced skewbacks and key-blocks of same bevel, the voussoirs also of same bevel, on account of the difficulty and complications arising in the manufacture and the sorting and handling involved in setting in proper position blocks of radial jointing, it having been found impracticable to confine the construction to radial joints. Thus it will be noted that in each arch-section but three forms of blocks are required, the skewbacks on either side

[1] A paper by Edwin F. Bertolett read before the Engineers' Club of Philadelphia, May 18, 1901, and printed in the *Journal* of the Society. Continued from No. 1341, page 79.

being of precisely the same form; all voussoirs are similar, though set on opposite sides of the key, the key itself being the third form. The voussoirs are further interchangeable by making both the top and bottom beds or soffits and top corrugated or dovetailed to receive the plastering work, and are reversible either by inverting or reversing endwise on alternate sides of the key. It is important that the direction of the line-of-pressure, and therefore the tangent or secant at right angles to the joint, fall within the central third of the depth of the arch in order to ensure the perfect stability of the whole arch. Much, further, depends on the care and skill of the workmen in setting the mortar for the various joints, since pressure is so directly and continuously transferred along both horizontal and vertical webs of the tile to the skewback; this is really the crucial point in securing the full strength of the arch.

In many locations upon buildings of irregular form, where beam-lines and side-walls or girders intersect at acute angles, much difficulty is experienced, and much imperfect work in setting of tile or brickwork of floors may result in the shimming and patching of cut pieces of tiling, for the purpose of filling out the irregular angles and intersections. This is a trouble less experienced in Philadelphia, perhaps, than in any other city, thanks to our checker-board street and block system. This feature, however, does constitute a serious objection to the use of burned-clay tiles in certain buildings and in floors of curved form and radial beam-plan, and is a point well considered in adopting a form of construction for floors in any new structure.

The terra-cotta used principally in all arch-construction is of the semi-porous composition of clay, containing a percentage of kaolin, mixed with about sixty per cent of sawdust and, perhaps, five per cent of fine coal or coke; this is thoroughly mixed by machinery and carried in batches to the presses, formed by forcing through dies and sorted, dried, and burned, the details of which process should be known to every architect and engineer, as the first step toward a knowledge of fireproofing methods, but which cannot be dwelt upon at this time. Hollow tiles for interior partition are similarly produced, set as subdivision partitions in all of our modern fireproof buildings. These blocks will receive and hold nails, much as a piece of wood, and practice has need to avail itself of this feature to a greater extent; in nearly all our more recent so-called fireproof buildings the use of door-studding of wood is all too common and quite uncalled for, since light iron jambs of channel form are quite inexpensive and can be used with as good results for preliminary framing of openings and as plaster grounds, and with less peril to the building, than can wood; within limits, the lighter form of sheet-metal channel-frame — always riveted, not soldered, at the mitres — will serve the purpose when exposed to heat better than a heavy rolled channel, and with the nailing of the casing and trim directly to the terra-cotta partition-blocks, as is perfectly feasible, much of the possible failure of partitions will be eliminated.

There is, perhaps, no fireproofing process so attractive in its general conception as that by which continuous areas of almost unlimited extent, of any form, shape or position, can be covered or formed into a surface or wall or partition without break or joint; for is not this what we seek to effect in all construction?

Brick or stone wall, floors, roofs and columns are at their best only when the joints between the small parts are nearest to elimination. It is a natural production of this prevailing condition that the extensive use of cement-concrete for building purposes in connection with modern methods of construction has been so extensively developed during the past decade. Concrete, in itself, being a powerful material under compression, but comparatively weak under tension, it is necessary that in all floor-constructions not uniformly and continuously supported a metal bond or tie be used in the lower part of all cement or concrete slabs spanning between supports. Of this form of construction Philadelphia does not afford as many conspicuous examples as might be expected; vast amount of detail and supplementary construction, however, evidence the adaptability of the processes, and numerous tests justify the acceptability of the methods of construction. Woven-wire mesh and expanded metal in a majority of cases form the metallic base or tension element of the construction, though examples are not wanting in which rods and twisted bars have been used for tensile members of concrete-construction. The immense quantities of water introduced in installing floor-systems of concrete constitute the chief objection to its use, on a purely structural view of the subject, necessarily delaying the introduction of floors and finish; but the facility with which forms of varied dimensions and sizes can be executed in this material and with as stable result and as great neatness of finish as work of more regular character, will commend the concrete form of floor and partition work in many cases. Moreover, as a preservative for the embedded steel-beams, and the possibility of filling small recesses, cavities, and odd corners, that occur in some forms of construction, particularly about post and girder connections, together with its cementing qualities at union of floor and wall and floor and partition, make it, the concrete-monolithic floor-system, a triumph in construction.

The work of placing concrete on bar or rod tension elements must, in all cases, be performed above a wood or other centring, usually supported, with iron hooks from the lower flanges of the supporting beams, with wood forms, inclosing girders, after which the whole is filled from above with the concrete; and being well packed around and above beams and girders and well incorporated with the iron-work, it is allowed to set for some days before removal of the supports and centrings. This work, being uniform and continuous and comparatively without detail, can be executed by comparatively unskilled labor, or workmen in charge of an intelligent and practical foreman, with assurance of satisfactory results.

Only the highest grade Portland-cements and anthracite boiler (steam) cinders are used by Philadelphia architects and engineers, with an admixture of fine stone-grit or clean bar-sand to fill the smaller voids. The loading for the structure itself is estimated on the basis of 85 pounds per cubic foot for cinder-concrete, with additions for the mesh and wood floor determined by weight, and the final examination by the building-department is made by actual loading of promiscuous sections of the floor, never to less extent than 600 pounds per square foot, placed clear of the beams, for office or apartment-house or hotel work, and 800 pounds per square foot for warehouse, store or mill work.

Authoritative tests for strength and fire-resistance of cement arch and floor work, made by entirely disinterested and competent parties, seem to indicate that the claims of many proprietors as to the virtues of their respective floor-systems are entirely valid, but careful selection of materials and great uniformity of execution and manipulation of materials alone will secure the best results; as heretofore stated, the chief differences and special characteristics of the various systems are in the form of metal tie or mesh used in connection with the concrete.

Two forms of concrete-and-metal partition-work are in popular use for subdivision of offices and apartments, the thinner partitions being made solid by filling-in between two thicknesses of wire-mesh, or expanded metal, wire-lashed to vertical angle-irons extending from floor to floor, too frequently with wood door-studding and base and wainscot blocking, for which there should be a superior means devised of securing these details of finish. Much the larger proportion of fireproofing of partition-work in Philadelphia is executed in hollow terra-cotta blocks set in cement on the floor-system, unfortunately trimmed at door and sash openings with plowed wood grounds to receive plastering and wood-trim.

From actual tests and examination by Philadelphia engineers and architects, the weight of the Roebling floor-system on wire-mesh and stiffening-bars is found to be slightly over 60 pounds per square foot of floor, not including the supporting beams.

The Merritt system, or expanded metal and concrete, is estimated on the same basis at 67.7 pounds per square foot of floor-area.

Plaster-of-Paris, or calcined-plaster, is a well-known non-conductor of heat, and for years much work has been done with mackite-blocks for furring of walls, ceilings, and construction of partitions for interior sub-division of buildings; this form of block is simply plaster-of-Paris cast in a mould and having incorporated in its composition spruce-shavings or fibre to increase its toughness; and while it can by no means be called a fireproof material, when placed in an otherwise combustible structure it has the virtue of affording a solid and, therefore, non-fire-conducting partition at a very moderate cost, and of ample stability for all ordinary sub-dividing purposes, and will receive and retain plaster without further preparation of the surface.

Recently the company manufacturing the plaster-board or mackite-block have turned their attention to the manufacture of a cast block and beam-protecting skewback, for fireproofing purposes, under the name of the Keystone Fireproofing Block, which is being introduced to some extent in Philadelphia; notably in the new power-house of the Girard Estate at Third and Chestnut Streets, and in the new marine-barracks at the League Island Navy Yard, the first mentioned being complete, the latter in process of installation. There are many attractive features about this form of construction; the sections, being cast, fit with great neatness between the beams; the skewbacks, which combine about 1½ inches of beam-protection, are bevelled, with a horizontal rebate about 2 inches mid-depth on the face, to receive the central block, cast with a similar bevel on the end and rebated to fit accurately the skewback; after all the blocks are set in place on any floor, the ends of all joints, heads and wall and beam joints are carefully filled with liquid calcined-plaster, thus forming practically one mass. A cement-and-concrete backing, carrying dovetailed floor-strips, 16 inches, centre to centre, is then laid, and the whole levelled and finished to receive the wood or tile flooring as may be desired.

In the blocks designed to carry heavy loads a strip of expanded-metal is usually cast in the heart of the block in form of a suspension-loop or modified catenary; for lighter work this is omitted.

Like the mackite-block, this floor-system affords a fine surface upon which a plaster finish can be most economically applied, and very severe tests would seem to indicate the entire sufficiency of the materials for fire-resistance.

I have had the pleasure of making a very careful examination of the test-house, and the condition of the walls and ceilings, which are constructed of Keystone-fireproofing, and have a very reassuring report of the result from the Inspector of the Philadelphia Board of Fire Underwriters.

The method of setting the floor and partitions in form of cast blocks has many advantages, it would seem, over the form of floor-construction practised by the Metropolitan Company, which is to cast the whole in place on centring and forms about the ironwork, of which I am advised Horticultural Hall is the best example existing in Philadelphia.

If time and experience shall demonstrate the amplitude of this form of floor and partition block for both strength and fire-resistance in connection with the hose-stream under high pressure, then

the many advantages of the calcined-plaster floor will be appreciated, for it is clean, sanitary, easily installed, and readily adapted to any position and condition; in its production it requires little machinery, no burning, and but limited time for drying. It is the lightest form of fire-resisting construction, being determined by actual test, with ample concrete backing, at from 30 to 40 pounds per square foot of floor, not including the supporting beams, and its cost should be proportionately advantageous. Tests of strength of the blocks taken at random from a number of regular manufacture, of 5 feet span, 10 inches depth of beam, with 1½-inch fire-protection, in which same were broken at loadings per square foot of floor-area ranging from 1,393 pounds to 2,100 pounds, sufficiently establish the structural value of the floor.

The Vulcanite floor for fireproofing is a combination of a plaster-cast shell and beam protection with concrete backing that is being introduced under the Bromley patents; it has as yet had but limited introduction in Philadelphia, but the work done has been of high class, and would seem to be worthy to be classed among the best efforts at fireproofing.

In use of the Metropolitan system of poured-plaster, the weight-allowance for dead-loading is somewhat higher necessarily, on account of length of time required to dry the cast by the slower natural process of atmospheric absorption; this weight, without beams, but including concrete and floor, is estimated from actual est to be 47 pounds per square foot of floor.

In addition to the above typical floor-systems, covering the use of terra-cotta, concrete, and calcined-plaster respectively, the Faucett system of hard-tile hollow lintels, with cement backing, in 15-foot spans of beams at 30 inches centre has been found to weigh 58 pounds per square foot of floor-area; with beams at same spacing of 20-foot span, the weight is 70 pounds per square foot. This floor-system was introduced in the Lorraine Apartment House and the Stephen Girard Building, and is in use elsewhere in this city.

The Rapp floor-system, consisting of a base of common bricks supported on tee-irons of heavy sheet-metal extending between beams spaced 5 feet apart, weighs, with contents, 83 pounds to the square foot, and is in use in the Real Estate Trust Building, the *North American* Building, the Albemarle Apartment House, and elsewhere.

One of the most important branches of fireproofing is to be found in the defensive fitting of exterior doors and windows of buildings against communicating or adjacent structures, and in this respect much good work has been done in the use of fireproof-windows and glazings of wire-glass.

In stores and warehouses, as well as in many factories, outside metal-covered shutters overlapping walls about the openings afford an excellent protection, and their use has been much stimulated by liberal reductions made by insurance-companies on regular rates; but I need not speak of the impracticability of shutters of this kind in offices, tenements, apartment-houses, etc., in which they would not be tolerated by tenants, and even if attached would never be closed; this leaves a weak spot in all our larger office-buildings and tenement-houses. It has to a degree been somewhat mitigated in many pronouncedly exposed locations by the introduction of wire-glazed metal-frame windows, but objection is made to the fact that this form of glass obstructs vision, though, in a corrugated form, it does not decrease the lighting of these buildings.

The importance of this feature of fireproof-construction cannot be made too emphatic, and while wire-glass is now made perfectly clear, it is an excellent fire-retardent, and with development in more perfectly protecting the frames with brick or terra-cotta and exposing only the positively essential glass-area, with two thicknesses instead of but one of glass, greater efficiency will have been attained.

I am not aware of any important introduction of so-called fireproof wood; much hope is reposed in the final success and efficiency of the processes, which will lead not to a resort to wood-construction, but to a retaining of wood trim and floors, which must always remain a popular finish; the adaptability, non-conductivity, softness, elasticity, and general pleasing effect make it an ideal building-material, and with its inflammability removed it will be again restored to an ideal position.

Philadelphia has been phenomenally fortunate in the matter of absence of fire in or adjoining her fireproofed structures; there are no lack of conditions in every respect similar to the well-known conditions surrounding the Home Life Insurance Building in New York.

There are office-buildings exposed to most inflammable structures, which with a fair start and favorable atmospheric conditions would penetrate and destroy the contents of, if not ruin, the more invulnerable structure; there are hotels that would be little more than a flue for the consumption of the weaker neighbor, and other in many respects excellent and modern structures so situated with regard to common construction that the latter would be but the signal for the positive annihilation of the interior of the former; and yet, barring a few incipient fires in the kitchen of one of our prominent apartment-houses, which, thanks to fireproof conditions, made no headway, escape has thus far been our good fortune.

The most severe fire in a modern office-building in Philadelphia, according to record, did occur on July 18, 1885, in the New York Mutual Life Building, resulting in a loss of $2,000 in damage to the building and $15,000 to the contents. It was caused by an electric-light wire to apartments occupied by telegraph operating-room in the fifth floor; some beams were warped, and were removed with the floor and plastering; but the apartments adjoining and below were practically undamaged.

The Bourse and Fidelity Building have both had fires which destroyed the contents and trim of apartments without extending beyond.

These cases serve to give great encouragement: as architects and engineers, we need to grasp the situation seriously, taking inspiration from past achievements, but, guarding every tempting retrogression, to take every advantage possible to improve future conditions; prevention at all times is infinitely better than cure, and while I have done little more than touch the verge of a vast and important subject in which every person has a vital interest, if I have succeeded in directing attention and interest toward the possible saving of a life or loss of property from the dire consequences of a conflagration, I trust, for your patience and indulgence, you will feel abundantly rewarded.

DISCUSSION.

WM. COPELAND FURBER: The experiments of James E. Howard (*Iron Age*, April 10, 1890, Kent's "*Engineer's Pocket-book*," p. 382) indicate that steel has its maximum strength at about 400 degrees Fahr. When the temperature is raised above this point, the strength decreases at a rate approximating 10,000 pounds per 100 degrees of heat. This fact teaches us that in order to preserve the integrity of the structure, the temperature of the metalwork must not be allowed to greatly exceed 400 degrees Fahr.

The method commonly employed to protect metalwork is to cover it with a non-conducting covering, or, rather, with a covering which is a poor heat-conductor, for all substances conduct heat to a greater or lesser degree. The substance used as a covering should not only be a poor conductor of heat, but be capable of resisting disintegration when it is subjected to rapid changes of temperature, which may be caused by the application of water when it is in a highly-heated condition.

A material which fulfils this condition to a remarkable degree is known as semi-porous terra-cotta. This material is composed of fire-clay, made porous by the admixture of sawdust with the clay, while it is in a plastic state. Upon firing in the kilns the sawdust is consumed, leaving the burned clay in a porous condition. This semi-porous terra-cotta can be heated to redness, and can then be plunged into water without any apparent disintegration.

Fire-clay is probably the most durable substance which can be applied to the protection of ironwork for protection against heat. The knowledge of its virtues, however, has led designers and manufacturers to decrease the thickness of the covering in many places to a point where it no longer answers the purpose in a satisfactory manner. In buildings a covering of one inch is all that protects the lower flanges of the floor-beams, and this is not at all sufficient. The part of the tile which covers the flanges is without air-cells, because there is not sufficient thickness to get them in.

Since the substitution of ironwork for brickwork in the structural parts of buildings, the tendency has been to restrict the space occupied by the ironwork to a minimum, and this has resulted in begrudging the every additional inch required for the fireproof covering, and, as a consequence, the fireproofing is no longer of sufficient thickness to fully ensure that the ironwork will be properly protected in event of great heat. There is but one remedy for this, and that is to increase the thickness of the covering at the vulnerable points. The same criticism may be made of Portland-cement coverings; a covering cannot be effective unless it has thickness and air-spaces, and it is misleading to talk of fireproof buildings when the fireproofing is but one inch thick at a vital point.

RELIGIOUS ART IN THE NINETEENTH CENTURY.

IT is interesting, as the decades roll by, to note the change in feeling in all sections of art, and especially in religious art; and, for a satisfactory study of this æsthetic evolution, no means are afforded as efficient as a French International Exhibition. The Gallic mind is essentially an organizing mind; and, therefore, when it develops an idea on so vast a scale as last year's show, it is comparatively easy to study advances and changes in any branch of art and manufacture.

The Exhibition's keynote was Retrospection. We were invited to gaze at every kind of work produced during the last few years, and then to compare it with older productions in the same industry. Every branch of man's artistic work, from Fine-Art, so-called, through Decorative Art and the artistic crafts such as gold and silver smithery, down to the manufacture of the simplest objects necessary for our well-being and daily use, was represented by Modern and Retrospective exhibits.

We had the Retrospective specimens in the Petit Palais, and the Centennial in the Grand Palais; and if Religious Art during the last hundred years could best be studied in the French section, the reason was simple — in no other country, until quite recently, has there been any really interesting school of religious painting. If we look back at the work produced by our own painters in the eighteenth and early part of the nineteenth centuries, we simply find feeble imitations of older masters.

The great Italians were divided in their views as regards the clothing of their saints and martyrs. Some, even of the earlier painters, introduced the dress, the armor and the weapons of their own time; others were content with drapery of an indefinite character. The Flemish painters more often adhered to the former plan; and we may study more quaint incongruities in the works of Memline

and Van Eyck than even in those of Paul Veronese. Early German pictures belong to the same class; but the revival of Religious Art at Munich during the nineteenth century was upon the "drapery" lines. So too in this country, West and Haydon were content to see "Nativities" and "Last Suppers" as they were painted by Michel-Angelo, Raphael and Veronese, but with the sentimentality varnish of Vandyck, Guido and the Carracci — the "most admirable artists" of the Italian schools, according to the testimony of some of the eighteenth-century critics. Reynolds, being a genius, was able to save his least interesting work from being dull, and for the same reason he soared, as did Rembrant and Rubens above their contemporaries, in this class of subjects. But we need only turn over the pages of Sir Joshua's "*Academy Discourses*" to find that his views as regards Religious Art were purely on the non-natural lines; and apart from the superiority of the *technique*, his sacred-subject pictures leave us as cold as those of Benjamin West.

In France, the eighteenth-century painters worked on the same lines, and Lesueur was as feeble in idea and as affected in manner as the Carracci or Sassoferrato; but with the dawn of the last century came an awakening. At first this did but evolve a sort of Classical *mise-en-scène*, which was led by Prud'hon; but the revival of Catholicism consequent upon the Concordat gave birth to a new school led by Delacroix. This group of painters can be studied in most of the Parisian churches by those who did not visit last year's Exhibition. Ingres, Ary Scheffer, Herse, and a host of others imitated the Eclectic schools of Italy; but Delacroix and a few contemporaries paved the way for a modern set of church painters, of whom M. Bonnat is one of the best representatives. In this painter's "Martyrdom of S. Denis" a partial return to the contemporary treatment of details is suggested.

In the pre-Raphaelite movement of fifty years ago, France had no hand; but it is possible to trace the later Impressionist upheaval to that English revolution. There is nothing akin in the two schools as regards system but the desire to see Nature correctly and to paint what was seen. This was the foundation of both departures; and likewise, if their respective *techniques*, their ideas of composition, of form, of color, and of beauty differed totally, there was a certain kinship in their honesty, their affectations, their exaggerations, and their marvellous powers of self-deception. In their enthusiasm for the cause of realism, they were as false to Nature as they were ideal in their interpretations of her; and in their desire to crush prettiness, they murdered beauty. As examples of this kinship, we may compare Millais's "Orchard" and Manet's "Déjeuner sur l'herbe."

But if France had no pre-Raphaelite of her own in the fifties, it is probable that Millais's "Carpenter's Shop," Mr. Holman Hunt's "Scapegoat" and "Christ in the Temple," and Burne-Jones's "Merciful Knight" set her younger painters a-thinking. Here were religious subjects treated in a most revolutionary manner. The personages of the drama were men of like passions as ourselves; the maudlin sentiment of Ary Scheffer was as dead as that of Murillo; and, although a partial revival under improved conditions has been seen in our own time in the work of M. Hébert, M. Bouguereau and his followers (M. Henner belongs to no school), still, the necessity of up-turned eyes as the outward and visible sign of religious feeling and emotions was proved by the works of Millais and his friends to be a monstrous fiction. The religious world protested loudly and not too politely; and it still protests in unmeasured language against the new development by the modern Frenchmen.

This is upon different lines from the pre-Raphaelite movement. The leading principle of Mr. Holman Hunt's work is that religious subjects should be treated with absolute exactitude and truth, and therefore, for the details of his great picture of the Temple, he not only searched for what he required on the spot, but he lived and painted in Jerusalem. This was an entirely new departure. Hitherto, as we have seen, there were two modes of dealing with the Bible pictorially: casting the scenes in a mould formed by the painter's own surroundings, and representing the scenes and actors in a convention of impossibilities. But some twenty years ago, M. Béraud set the religious world of Paris at loggerheads by painting his "Descente de Croix" with local properties, just as Memlinc or Veronese might have done. The Italian gave the world a Magdalen at the Pharisee's house, with all the guests clad in the rich damasks and fashions of the day, and in the "Marriage in Cana" he has even gone the length of portraitizing himself and his friends, Titian and others, as the musicians. And in the same spirit we see the French artist reading the Gospel narrative with the Italian's mental glasses, and painting his Magdalen prostrate before the Master, with a surrounding of very modern Parisians of the upper class. The woman wears evening dress of an elaborate character; the men are in all their glory of black and white ties; but there is no more irreverence in this modern allegory of the lesson than in the gorgeousness of the Venetian Feast, for the situation is saved by the conventional costume and nimbus of the Saviour. It is incongruous, no doubt, and the "Descente" is equally so; but it is quite possible that this treatment may appeal to many of us more than that of by-gone days. Was it not the reality of the type of the fifteenth-century "Madonna" which touched the heart of the faithful? Did they not feel the lovingness of the Child-Christ just because the picture represented a child with which they were acquainted? Was not the intensity of the sacrifice of the cross brought before them mainly because those sorrowing women were of like passions with themselves, and those careless soldiers and that brutal crowd were all only too familiar to them in their every-day lives. The Man of Sorrows was suffering as many of their friends had suffered; the whole scene was as if it had taken place in Florence or Rome. And so the priest in the *soutane* who represents St. Joseph of Arimethea, the poor Parisian workwomen, the men in blouses, and the fashionable guests at the supper-table displaying upon their features the possession of all the vices from indifference to sensuality, most certainly appeal to the hearts of modern religious people far more than the conventions of the old masters. Both readings are false, but the only alternative is the historical treatment of some of the pre-Raphaelites.

MM. L'hermitte, Lerolle, Toudouze and Lagarde, Mr. Hitchcock and Herr Uhde are exponents of the same class of work, but their treatment is rural rather than urban. The Virgin who sits or walks in a garden of lilies, the Holy Family which cannot find room in the inn by the snow-clad fields, the Master who sups with the tired-out harvesters, are all charming examples of the modern school during the last thirty years. But now we come to a further evolution, in which mysticism takes a part; a departure which is best exemplified by the work of MM. Dagnan-Bouveret and Richemont. These artists, while adhering to modern dress and accessories, pour on to their canvas a rich flood of light, which diverts the subject of the hard realism of the earlier pictures. There is more poetic feeling in the treatment, or, rather, the poetry is less disguised, less hard to find; and the rough peasants of Herr Uhde and M. L'hermitte give place to the mystic rustics of MM. Richemont and Dagnan-Bouveret.

The curious thing is that, with all this new development of religious art, there is no change in the style of church decoration — the evolution has only been in easel pictures. In the decorative line, our modern painters, like the architects, only follow in the steps of their forbears. Churches are built in the styles of former centuries — Classic, Romanesque, Pointed, Renaissance — there is no nineteenth-century architecture. And in the same way, the decorators fall back upon the old masters — there is no nineteenth-century decorative art except for private houses, and this is mostly adapted from older models. The original church-builder and decorative painter have yet to be born; but possibly, as the last word seems to have been spoken in these arts, the less we see of modern attempts at originality, the better.

S. Beale.

THE ENGLISH WALL-PAPER TRUST.

THE best-organized trust in Great Britain is known as the Wall Paper Manufacturers, Limited. It represents thirty-one firms and 98 per cent of the trade.

England has been for some years the leading country for the manufacture of wall-paper. We are exporters, and import little. Wall-papers of the best class are exported largely to the Colonies, to the East, and to Continental countries. Foreign-made paper has never sold well in England. The designs do not appeal to English taste, the widths do not suit English methods of decoration. Our manufacturers ought, therefore, to have been doing well. So some of them were, but the competition was encouraging the production of shoddy goods and cutting of prices. The leading manufacturers considered that the only way to improve the industry — and also their own financial position — was by combination. They worked at a scheme for three years. One firm after another was brought in until the nucleus of the combine was formed. Then if others could not be persuaded into joining they were threatened with war to the knife.

The terms of purchase were liberal. There was no favoritism, and by a judicious application of the two weapons, persuasion and coercion, the combine was formed. The interests of the various firms were pooled on an equal basis. No one knew what the profits of the others were until the whole scheme was settled. No firm was to be paid for goodwill which had not earned 5 per cent on the value of the works. Every percentage above 5 ranked as goodwill, and was commuted accordingly. The distribution of the shares and stock was also based on the earning-capacity of the works. The fact that the prospectus mentioned thirty-one works but only gave the profits on twenty-three would suggest that eight were worked at a loss.

Having consolidated 98 per cent of the trade, the organizers proceeded to tie up the merchants. One combination leads to another. Without agreements with the dealers in wall-paper the trust would have been in greater danger of competition. But an absolutely binding agreement was made with practically all merchants to buy paper only from the associated firms. The alternative was a boycott. If a merchant bought outside the trust it would not supply him with a single piece. And as the firms in the trust made all the best paper, no merchant of standing could afford to be independent of them. Another alliance of a looser kind was made with the makers of machinery.

One of the first things which the trust did was to close the works which were run at a loss.

One firm's mills had been turning out several kinds of paper. The trust specialized. One mill was occupied exclusively with cheap paper, another with more expensive and artistic paper, and so on. Prices were at once revised, with the result that the cost of the cheapest classes of paper rose from 10 to 20 per cent. Paper which sold at 6*d*. was increased to 7*d*. or 8*d*. per yard, but the prices of the

dearer papers remained the same. All control over prices and selling was centralized. Many of the travellers were discharged. New machinery was put down where required, the export trade vigorously pushed, but instead of three or four travellers competing with each other in the same field only one traveller was sent. The economies secured during the first year were almost sufficient in themselves to pay the dividends.

The Board, who are the former heads of the leading firms, keep a firm grip of the business. Every branch makes elaborate returns weekly. The Directors at once see where progress is being made and where stimulus is needed. They travel over the country inspecting works, making suggestions and devising improvements. They are practically the men who keep their fingers on the pulse of the trade. They carry out to the utmost the economies of large-scale production, and they did not start handicapped with a large stock of watered capital.

The Wall-paper Trust enjoys an enviable immunity from foreign competition. If it maintains a high standard of artistic execution, with originality and good taste in design, it can hold its foreign market. Up to now the foreign trade has increased. The only serious competitor would be the United States, where there is another trust, and I am informed there is an alliance between the two. The American designs, in any case, do not appeal to the English public. New competitors at home find themselves faced with a closed market. They can supply small builders, and that is what the firms outside the trust are doing. There has been brisk competition recently in the cheaper class of papers used by jerry-builders, and one of the trust-firms in Chelsea is trying to undersell the outsiders in their own lines. They have created a brisk demand, but are probably selling in the meantime at a loss to crush competitors.

Serious competition is more likely to come from Germany. English wall-paper of new design is fashionable just now in Germany, and the Germans have started importing the English paper-making machines, which are the best. This is almost a sure prelude to making export paper from English designs of the size and style to suit English taste. No doubt the promoters of the trust foresaw this danger when they tied up the dealers. Their monopoly depends to a great extent on the stability of this compact. Up to now there has been no difficulty in keeping a tight hold on the merchants. The Directors of the Wall-paper Trust occupy a strong position, and could, if they chose, supply better paper at the same price as under competition and maintain our supremacy in the business by excellence of quality. — *The London Mail.*

ENGLISH TOPIARY WORK.

LADIES are now the most enthusiastic of gardeners, as is shown by the numerous books they have written within the last two or three years, embodying their observations amid the shrubs and flowers, which have borne no small part in awakening the present widespread interest in the subject. So far, however, they have paid but little attention to the remarkable revival of the fashion for clipping what an old writer has called "humble and tonsile" trees into fantastic shapes and devices. For many years, the art, if so it may be called, had fallen into abeyance, but at the two great shows of the Royal Horticultural Society there was abundant evidence that taste is coming around again to the trimly-cut styles that attained their zenith of popularity under William and Mary. English growers are encouraging the present revival, and old works on horticulture are being ransacked for designs. The fashion is a somewhat costly one, as it is several seasons before a yew or a box is sufficiently definite in its shapeliness to indicate whether it is intended to represent a swan or a peacock, a pyramid or a cone, and the most constant care and discreet clipping are needed to bring it to the desired form. Hence, 10 guineas is a very moderate sum to be asked for a tree well started upon its quaint shape, and for large ones of elaborate design 20 or 25 guineas is not an uncommon figure. The varieties most commonly employed are yews or box, but in old days the holly, hornbeam, and white-thorn were often utilized. Observant holiday-makers in the more remote districts will be able to see even yet many very good specimens in cottage and farmhouse gardens, which their possessors have tended year by year in their curious growth.

There are, of course, several gardens in the country celebrated for their "verdant sculpture," as such trees are often designated. One of the most famous is that at Levens Hall, near Kendal, in Westmoreland, where one of the most remarkable results of patient trimming shows a peacock on a solid square pedestal of yew. But there are scores of different shapes, some forming little arbors, others with tall bare stems surmounted with something very like the typical tree of a Noah's ark, while others are supposed to depict hens on a nest. The collection at Elvaston Hall, the seat of the Earl of Harrington, in Derbyshire, is another of the most noteworthy, and one of its unique features is a Chinese pagoda in yew surmounted by an imperial crown. At Easton Hall, where the Countess of Warwick has cultivated so many charming fancies in her gardens, there is a most curious sundial formed entirely of yew and box. Another admirer of these horticultural eccentricities is the Earl of Rosebery, who has on the lawn at The Durdans two geese, two hens and a peacock in close-cut greenery. Haddon Hall has also some fine examples of this "topiary work," as it is often called by early authorities, and at Risley Hall, in Derbyshire, a pair of doves, about 7 feet long, with their bills just meeting, form an archway in a yew hedge. At Packwood, in Warwickshire, the Sermon on the Mount is depicted in trees, where four tall yews stand for the evangelists, twelve more for the Disciples, and a large arbor cut out on a raised eminence constitutes the "pinnacle of the Temple." Several churchyards possess fine old specimens.

Many decades must pass before such wonderful examples as these could be produced again, but with quickset hedges of white-thorn it is possible to get definite outlines in about seven or eight years. That quaint authority Markham, in "*The Country Farm*," recommends those laying out a garden to surround it with "fine curious hedges made battlement-wise in sundrie forms according to invention, or carrying the proportions of pyllasters, flowers, shapes of beasts, birds, creeping things, shippes, and such like." The framework, as he advises, should be of osier, and in the spring or autumn "you shall set white-thorn, eglantine, and sweetbriar mixt together, and as they shall shoot and grow up, so you shall wind and pleach them within the latticework, making them grow and cover the same." Up to the beginning of the nineteenth century such hedges, and those of the slower growing yew, were popular, and some are to be found even yet. It would seem to be the aim of the modern gardener to revive many of the horticultural fantasies of the past, and the present generation has seen the hardy annual take the place of the "carpet bed" with its stiff geometrical design. — *London Telegraph.*

ILLUSTRATIONS

[*Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement of cost.*]

UNITED STATES POST-OFFICE, JOLIET, ILL. MR. JAMES KNOX TAYLOR, SUPERVISING ARCHITECT, WASHINGTON, D. C.

IT seems proper to call attention to the fact that the original drawings for this building were published in the June number of the *Brick-builder*, it being the then intention to construct this building of brick with stone trimmings. But since that time the drawings have been considerably changed and the building made entirely of stone, and it is believed very much improved architecturally.

ENTRANCE TO KINGSBURY PLACE, ST. LOUIS, MO. MESSRS. BARNETT, HAYNES & BARNETT, ARCHITECTS, ST. LOUIS, MO.

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INTERIOR OF THE PERISTYLE, OR "TEMPLE OF FAME."

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COMMUNICATIONS

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"THE POLICLINICO UMBERTO I, ROME."

August 27, 1901.

To the Editors of the American Architect: —

Dear Sirs, — In the account of the Policlinico Umberto I in Rome by Mr. James Gilmore, published in No. 1338 of the *Architect*, some of the dimensions and quantities were not correctly transposed from the metric into their British equivalents. The area of the grounds is 538,000 square feet and the area covered by buildings 134,600 square feet instead of 50,000 and 12,500 square feet respectively. The width of the side streets is about 140 feet and of the front street 170 feet, instead of 100 feet, the buildings being set back from the street-line on an average of 90 feet.

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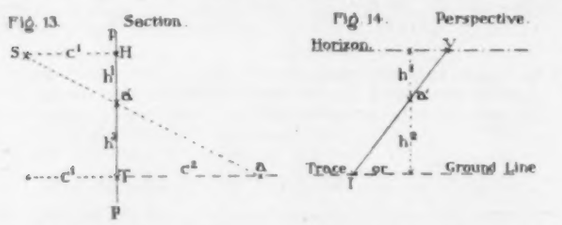
ERRATUM.

To the Editors of the American Architect: —

Dear Sirs, — As I was not able to revise the *proof* of my paper on the "Perspective of Concentric Circles" in your issue of the 27th of July, an error in Figures 13 and 14, illustrating the *Note upon Position*, escaped detection. As this made the text quite unintelligible I shall be much obliged if you will kindly print the corrected version which I enclose. I have taken advantage of this opportunity somewhat to simplify both text and illustrations. W. R. Ware.

Note 1, *Position.* — Figures 13 and 14 illustrate the proposition that the perspective of a point lying in a plane, divides the normal



distance between the horizon and the trace (or ground-line) of the plane, in the same ratio that the plane of the picture divides the normal distance between the station-point and the given point.

In these figures a is the given-point, lying in a horizontal plane; a' its perspective in the plane of the picture; and S the station-point, or position of the spectator.

It makes no difference, as may easily be proved, whether the plane in which the line lies is horizontal, as in these figures, or inclined.

Of course, the nearer the plane of the picture to the spectator, the nearer is the perspective of the point to the horizon. But the similarity of the triangles in Figure 13 shows that these distances are proportional to the distances of the plane of the picture from the given point and of its perspective from the ground-line. $c^1 : h^1 = c^2 : h^2$; hence, $c^1 : c^2 = h^1 : h^2$; Q. E. D.

Hence, if a given point is twice as far away from the station-point as is the plane of the picture, its perspective will be half-way between the horizon and the ground-line. If it is three or four times as far away its perspective will occur at a third or a fourth of the distance from the horizon to the ground-line.

This makes it practicable to locate the perspective of a point, without the aid of points-of-distance, if the initial-point and vanishing-point of a line passing through it are known, and, also, the distance of the picture and of the given point from the spectator.

NOTES AND CLIPPINGS

Opening the Adena, O., Mound. — The great Adena mound, which is being opened by Dr. C. W. Mills, of the Ohio State University, and a number of assistants, is proving to be one of the richest in archæological curios that has ever been excavated in this county. Already, although not 10 feet of earth has been taken from the top, there have been valuable finds, and the next layer of soil is expected to be unusually rich in curios. Two skeletons and a number of articles which had been buried with them were found yesterday. One skeleton was that of an adult, and the other that of a child, perhaps fourteen years of age. With the skeletons were three bracelets, two finger-rings and some pieces of pottery. Over the head of the child was a curious head-dress made of strips of mica about an inch in width, perforated at the ends with small holes, through which they were bound together to fit the head. The mica composing the head-dress is believed to have been brought all the way from North Carolina, as that is the nearest known place where this quality exists, although it is of course possible that the Mound-builders may have had nearer quarries. The bracelets are good specimens of the Mound-builders' work, and are made of copper, evidently brought from the region of Lake Superior. Two are round, while the other is oval in shape, to fit the wrist more closely. They are worn by simply springing into place about the wrist. They had been originally covered with cloth, and a piece of this, in excellent condition, has been preserved, and is regarded as of great value. Dr. Mills states that the finger-rings are the most perfect and beautiful he has ever seen. They, too, are of copper, each of three spirals, and are made with great skill. A round pot was also found, which had been doubtless filled with food of some kind and buried with the dead to sustain them on their trip to the Happy Hunting-grounds, as was the custom of the Mound-builders. Nothing of its contents remained. The work of taking down the mound is being done with the utmost thoroughness, every basketful of earth being carefully sifted. The mound is one of the largest in existence, and promises to prove a veritable treasure-house. — *Cincinnati Enquirer.*

Biblical Antiquities. — For the student of Biblical antiquities peculiar interest attaches to the statement of Dr. Bliss, contained in a letter written to the Palestine Exploration Fund and published in part in the last issue of the *Quarterly Statement*, that "the majority of the objects found in our excavations are now arranged in a small museum." A large room in the Government School, just inside Herod's Gate at Jerusalem, has been set aside for this purpose. Last autumn Dr. Bliss numbered and catalogued the objects selected for exhibition. In one of the cases there are 101 examples of pre-Israelite pottery, and in another 184 specimens of Seleucidan ware, besides which there are pottery figurines, gems, tablets, scarabs, and various objects of bronze, iron, bone, stone and glass, as also a collection of coins. Small as this museum is, it is unique in that "it contains the only full collection from which the history of Palestinian pottery may be studied from pre-Israelite to Roman times." The existence of this small museum will, doubtless, add to the effectiveness of the work of the American School at Jerusalem, which enters on its second year this autumn, with Professor Mitchell, of Boston, as director. It is announced, also that the University of Chicago will send a special field-class to Palestine, under the direction of Prof. Shailer Matthews. Another interesting mosaic, described by Mr. Dickson, British Consul at Jerusalem, as "a work-of-art of high order," was found towards the end of last March in the grounds of a Jewish colony, northward of the city, near the Damascus gate. The proprietor of the ground, in building a cistern for his house, found this mosaic scarcely 3 feet under the surface. The design is heathen. Orpheus is represented, life-size, playing upon his harp. Beneath him are Pan and a centaur. This portion of the mosaic is surrounded by a frame of ornamentally entwined branches, enclosing various other figures. Beneath this are two women, around whom is an inscription in Greek letters — Theodosia and Georgia. This is the second mosaic which has been found in the last few years in this locality, besides those discovered on the other side of the Jordan, the most famous of which was the map of Palestine from Madeba. — *N. Y. Evening Post.*

The Leaning-towers of Bologna. — Visitors to Bologna are generally puzzled by the two towers, the Asinelli and the Garisenda. If judged impartially they are not better examples of brickwork than can be seen by the thousand in the factories of Lancashire. They have suffered from settlements, and have long ceased to possess verticality. The Garisenda especially is so much out of plumb one wonders why it has not collapsed. But Italy exercises so much glamor over the judgment that we may occasionally hear travellers speak of the towers as if they were the most picturesque constructions which have an important function in general views of the city. The Garisenda has, however, literary interest, for Dante refers to it in his "*Inferno*," comparing the giant who stoops to seize him and Virgil to the tower at a time when it was cloud-capped. The inclination of the Garisenda is due to a sudden sinking of the soil, but it has stood so well there must be some pity for it, for, as far as can be judged, it can hardly escape from a collapse. The soil, which so long was unaffected by earth-movements, is now sinking, and produces cracks in the walls of the structure, which is square in plan and about 180 feet in height. The mortar is falling out of the joints. It is perhaps excusable, says the *Architect*, for the authorities of the old scholarly city, which was known as the Alma Mater Studiorum, to imagine that the tower cannot be overthrown, and to assume that its security can be ensured by the application of a little rough-cast; but a structure that is 10 feet out of the perpendicular, and is nearly a thousand years old, demands a more efficacious remedy. — *Scientific American.*

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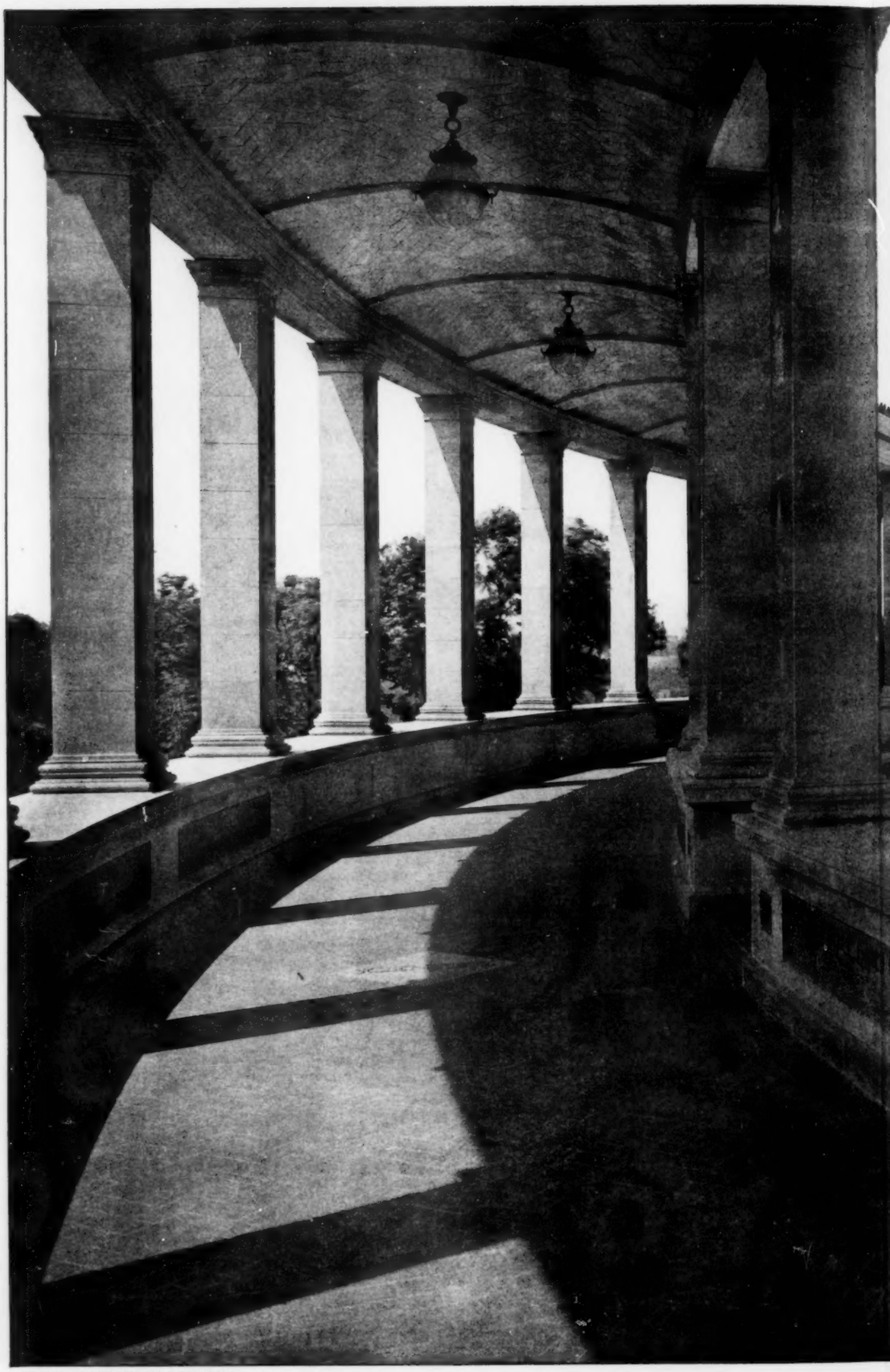

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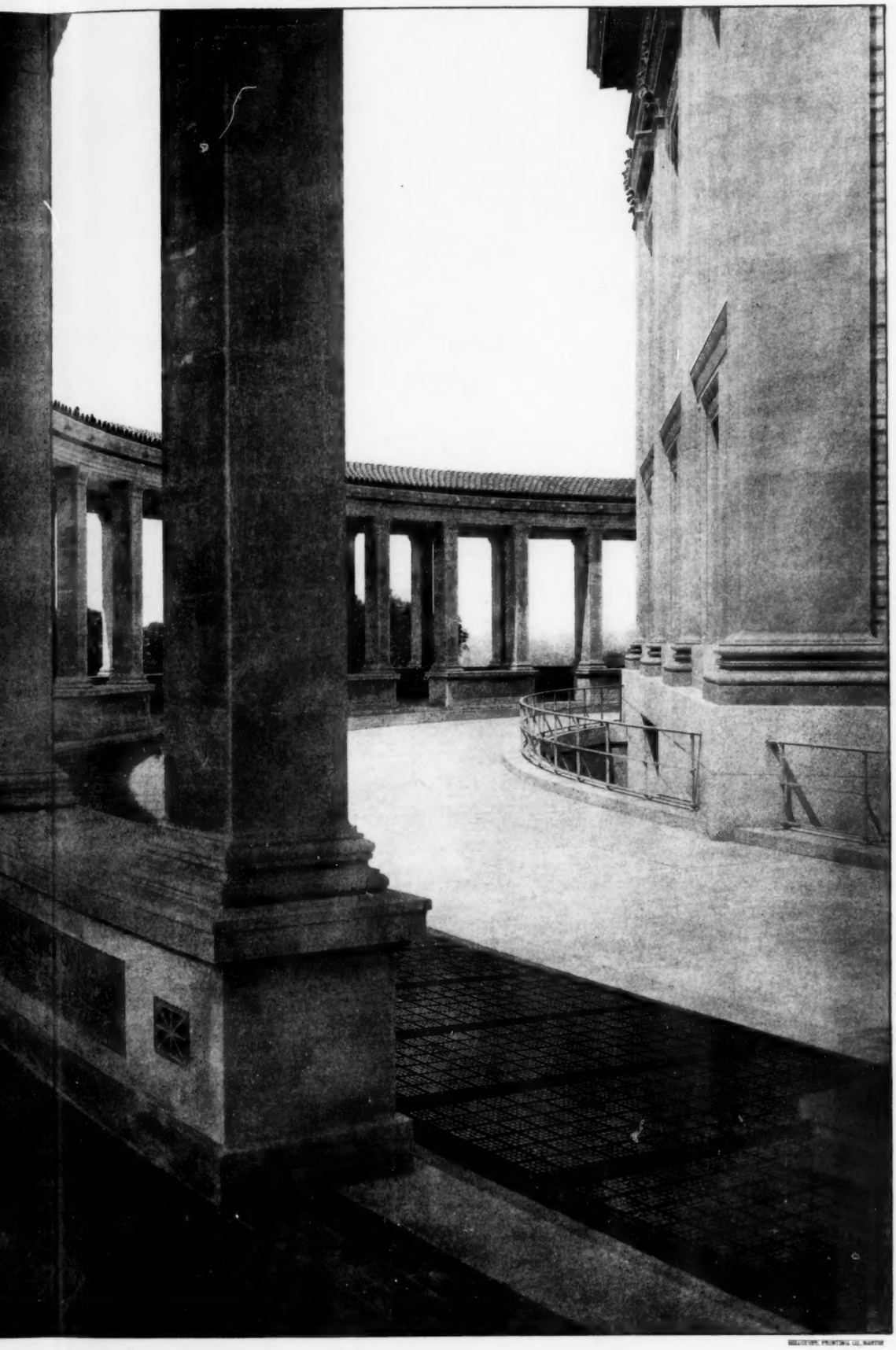

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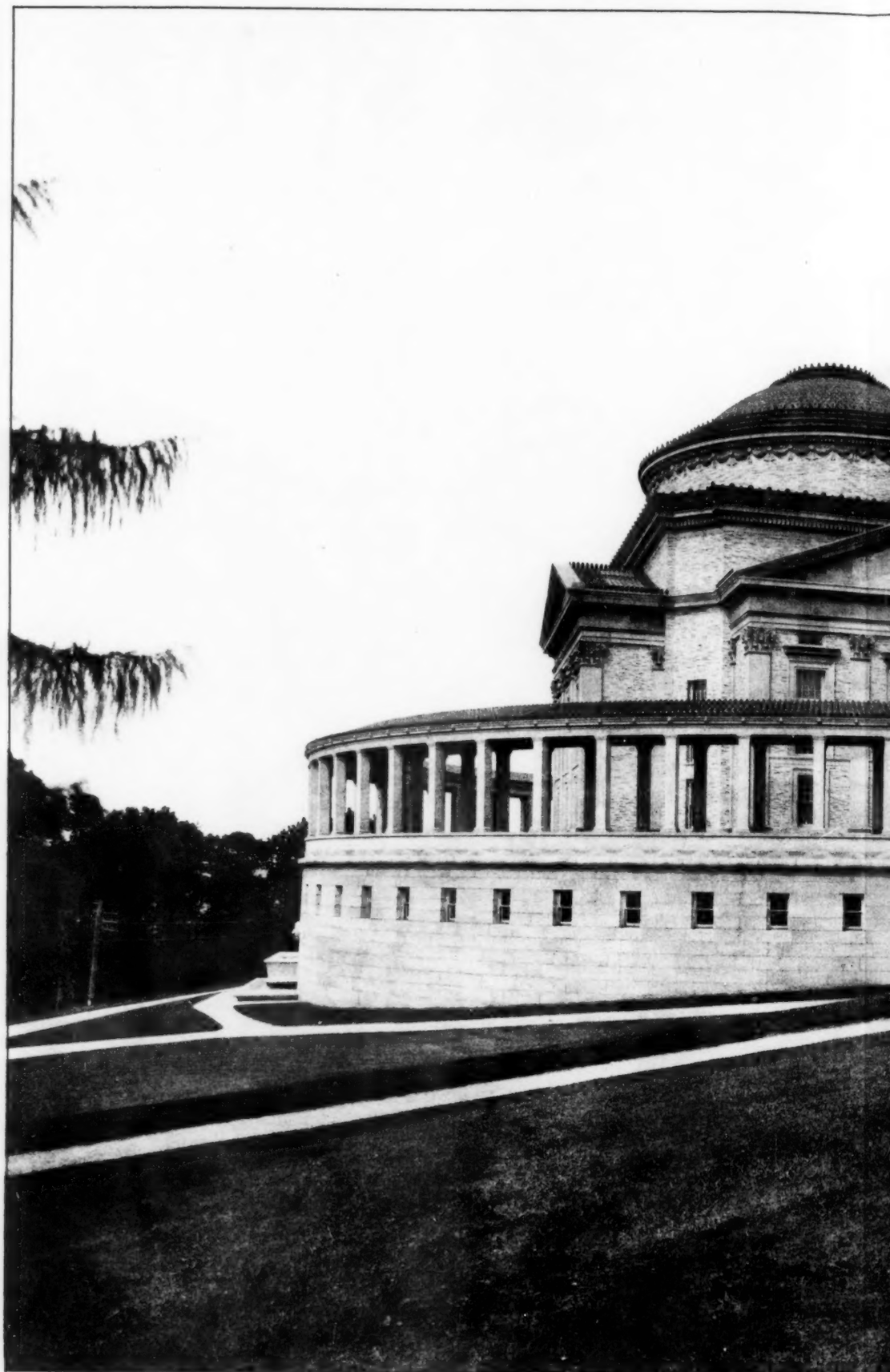

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The matter already illustrated may in small part be classified thus:

PUBLIC BUILDINGS

City Hall, New York, N. Y.	Date 1803-12
Old State House, Boston, Mass.	" 1748
Pennsylvania Hospital, Philadelphia, Pa.	" 1755
Carpenters' Hall, Philadelphia, Pa.	" 1770
Independence Hall, Philadelphia, Pa.	" 1729
Faneuil Hall, Boston, Mass.	" 1741

and others.

CHURCHES

King's Chapel, Boston, Mass.	Date 1749
Seventh-day Baptist Church, Newport, R. I.	" 1729
Christ Church, Alexandria, Va.	" 1767
Christ Church, Philadelphia, Pa.	" 1727
St. Paul's Chapel, New York, N. Y.	" 1764
Old South Church, Boston, Mass.	" 1729
First Church, Hingham, Mass.	" 1681
St. John's Chapel, New York, N. Y.	" 1803
First Congregational Church, Canandaigua, N. Y.	" 1812
St. Peter's P. E. Church, Philadelphia, Pa.	" 1758
Gloria Dei Church, Philadelphia, Pa.	" 1700

and others.

IMPORTANT HOUSES

Fairbanks House, Dedham, Mass.	Date 1636
Royall Mansion, Dedham, Mass.	" 1737
Philipse Manor House, Yonkers, N. Y.	" 1745
Tudor Place, Georgetown, D. C.	" 179-
Mappa House, Trenton, N. Y.	" 1809
Woodlawn, Va.	" 1799
Mount Vernon, Va.	" 1743

and others.

Incidentally there are shown special measured drawings or large views of the following features and details:

Porches and Doorways	67 Subjects
Staircases	21 "
Mantelpieces	81 "
Pulpits	6 "
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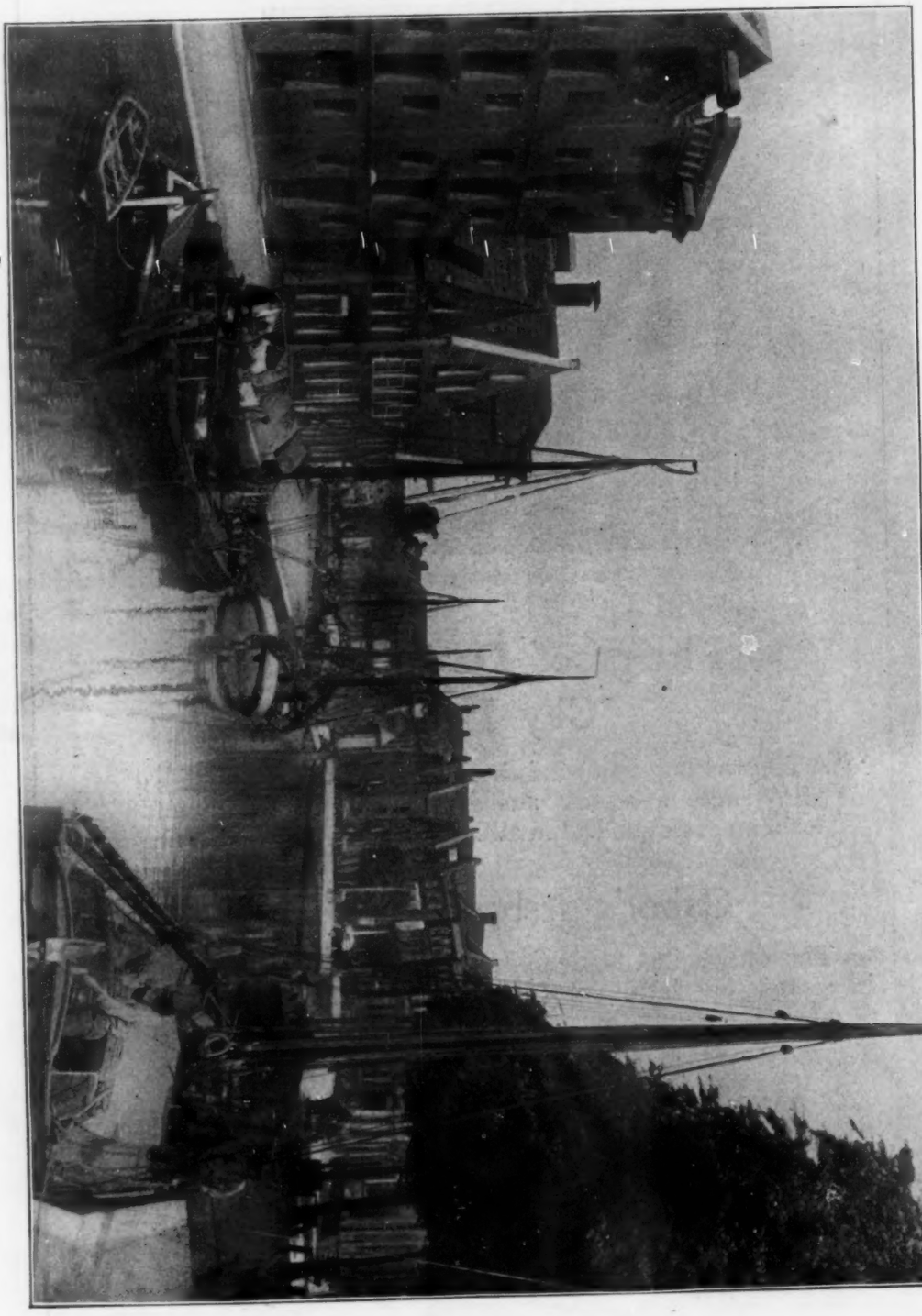

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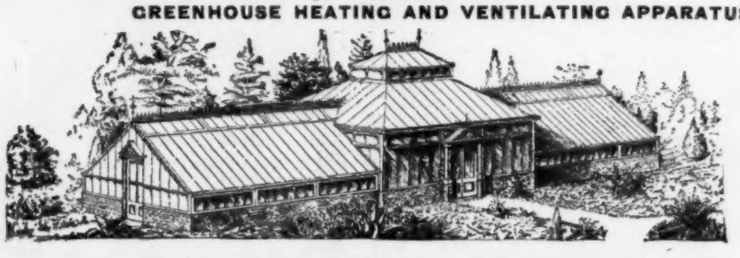

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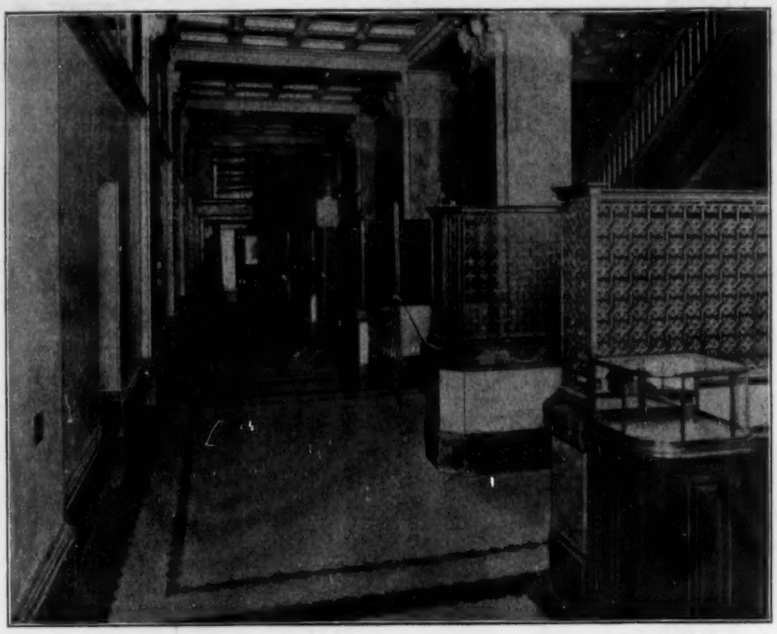

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BUILDING INTELLIGENCE.

(Reported for the American Architect and Building News.)

[Although a large portion of the building intelligence is provided by their regular correspondents, the editors greatly desire to receive voluntary information, especially from the smaller and outlying towns.]

ADVANCE RUMORS.

Albany, N. Y. — It is stated that L. and J. Brandt, New York City, have prepared plans for an eight-story fireproof lodge hall.

Asheville, N. C. — J. M. Westall was awarded the contract for constructing a brick and stone church for the Central Methodist congregation at $56,000.

Atlanta, Ga. — The Ware Furniture Co., it is said, will erect a $30,000 business building.

Brockton, Mass. — A five-story brick building, 50′ x 150′, will be erected here for Mr. L. H. Shaw, for the manufacture of shoes.

Butte, Mont. — It is rumored that the County Board will erect a modern county hospital, of pressed brick and stone, costing about $20,000.

Cambridge, Mass. — A residence for professors will be erected by the Episcopal Theological School on Phillips Pl. The structure will be two and a half stories high, and will be constructed 15 feet from the line of the street. The contract has been awarded to R. D. Donaldson, of Lincoln.

Hartwell, Richardson & Driver, of Boston, have prepared preliminary plans for an armory, which it is proposed to build at an estimated cost of from $100,000 to $125,000.

Camden, N. J. — A site has been selected at Lake Garden for the proposed building to be erected at a cost of $37,000, for the Eastern Home of the Benevolent & Protective Order of Elks.

Chase City, Va. — Plans have been prepared for the $125,000 hotel for the Chase City Water Co. John G. Miller, Richmond, secretary.

Chattanooga, Tenn. — R. H. Perry will erect a two-story, 9-room pressed brick and stone trimmed residence on Vine St., at a cost of $6,000.

Chicago, Ill. — Holabird & Roche, Monadnock Block, are preparing plans for a $125,000 five-story and basement fireproof building, 100′ x 100′, to be built on the east side of La Salle St., near Harrison St., for the Northern Trust Co., trustees for the estate of S. A. Kent. The exterior will be constructed of pressed brick and terra-cotta.

A. C. Wilmanns, *Journal* Building, has completed plans for a $175,000 five-story brick and stone addition, 150′ x 200′, to McCormick Harvesting Machine Co.'s twine factory.

Chippewa Falls, Wis. — Robert T. Newberry, New York Life Building, Chicago, Ill., is preparing plans for a $100,000 sanitarium hotel to be built here, for the Chippewa Spring Hotel Co.

Cincinnati, O. — Revised plans have been made by Dornette & Shephart, Pickering Building, for the new building for the German Deaconess Home and Hospital. The structure will be 35′ x 85′ x 95′, constructed of pressed brick and stone, and cost $60,000.

Columbus, O. — The Pythian Castle Association has been incorporated to construct a $50,000 lodge building. Incorporators: Andrew G. Davis, P. W. Stewart, E. B. Kinkead and others.

Decatur, Ala. — The Alabama R. R. Commission has ordered the construction of a new union passenger station here.

Denver, Col. — E. R. Rice, Kittredge Building, has prepared plans for a $35,000 brick and stone three-story office-building to be erected at 1800 Stout St. Owner, J. S. Flower.

Detroit, Mich. — Architects Malcomson & Higginbothan have completed plans for a two-story schoolhouse, 100′ x 163′, for the Board of Education; $45,000; brick construction, slate roof, steam heat.

Easthampton, Mass. — A brick addition, 75′ x 130′, three stories high, will be built for the West Boylston Manufacturing Co. Building will be located east of the new mill. It is stated that additional tenement-houses will be built.

East St. Louis, Ill. — The Brooklyn School Board, district No. 4, has voted to issue bonds for the erection of a new school-house. Anderson Bolden, president.

Emporia, Kan. — Reports state that Mrs. T. M. Sinclair will build a $30,000 church for the Third Presbyterian Society.

Fort Worth, Tex. — Queen City Lodge No. 21 and Red Cross Lodge No. 14, Knights of Pythias, have arranged to erect a new three-story temple at 3d and Main Sts.

It is stated that a $25,000 Orphans' Home is to be built by the Directors of the Benevolent Home.

Mrs. M. Gagnos will erect a 10-room residence on Field's Hill Side addition, to cost $20,000.

Galveston, Tex. — It is stated that A. J. Walker, president of the Rosenberg Library Association, has invited plans for a $100,000 library building.

Green Bay, Wis. — George Georgenson has been awarded the contract for construction of the two-story brick and stone city-hall, at $33,633.

Haverford, Pa. — Architect Wm. L. Price, Philadelphia, has made the plans for a three-story store and half-timber house, 42′ x 81′; and a stable, 24′ x 55′, for Louis Clark, to be built at this place.

Houghton, Mich. — Paul P. F. Mueller has been awarded the contract to erect the Citizens' National Bank building, except heating and lighting, at $40,000.

Houston, Tex. — Reports state that the Baptists of this city are to erect a hospital at a cost of $30,000, if possible to secure funds.

Indianapolis, Ind. — Chas. Edgar Bater, Lemcke Building, has prepared plans for a $40,000 lodge building for the Knights and Ladies of Honor. Brick and stone construction, three stories, hot-water heat, 50′ x 110′.

Jackson, Miss. — A $75,000 court-house is to be built in Hinds County.

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(Advance Rumors Continued.)

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Columbus, O. — The Pythian Castle Association has been incorporated to construct a $50,000 lodge building. Incorporators: Andrew G. Davis, P. W. Stewart, E. B. Kinkead and others.

Decatur, Ala. — The Alabama R. R. Commission has ordered the construction of a new union passenger station here.

Denver, Col. — E. R. Rice, Kittredge Building, has prepared plans for a $35,000 brick and stone three-story office-building to be erected at 1800 Stout St. Owner, J. S. Flower.

Detroit, Mich. — Architects Malcomson & Higginbothan have completed plans for a two-story schoolhouse, 100′ x 163′, for the Board of Education; $45,000; brick construction, slate roof, steam heat.

Easthampton, Mass. — A brick addition, 75′ x 130′, three stories high, will be built for the West Boylston Manufacturing Co. Building will be located east of the new mill. It is stated that additional tenement-houses will be built.

East St. Louis, Ill. — The Brooklyn School Board, district No. 4, has voted to issue bonds for the erection of a new school-house. Anderson Bolden, president.

Emporia, Kan. — Reports state that Mrs. T. M. Sinclair will build a $30,000 church for the Third Presbyterian Society.

Fort Worth, Tex. — Queen City Lodge No. 21 and Red Cross Lodge No. 14, Knights of Pythias, have arranged to erect a new three-story temple at 3d and Main Sts.

It is stated that a $25,000 Orphans' Home is to be built by the Directors of the Benevolent Home.

Mrs. M. Gagnos will erect a 10-room residence on Field's Hill Side addition, to cost $20,000.

Galveston, Tex. — It is stated that A. J. Walker, president of the Rosenberg Library Association, has invited plans for a $100,000 library building.

Green Bay, Wis. — George Georgenson has been awarded the contract for construction of the two-story brick and stone city-hall, at $33,633.

Haverford, Pa. — Architect Wm. L. Price, Philadelphia, has made the plans for a three-story store and half-timber house, 42′ x 81′; and a stable, 24′ x 55′, for Louis Clark, to be built at this place.

Houghton, Mich. — Paul P. F. Mueller has been awarded the contract to erect the Citizens' National Bank building, except heating and lighting, at $40,000.

Houston, Tex. — Reports state that the Baptists of this city are to erect a hospital at a cost of $30,000, if possible to secure funds.

Indianapolis, Ind. — Chas. Edgar Bater, Lemcke Building, has prepared plans for a $40,000 lodge building for the Knights and Ladies of Honor. Brick and stone construction, three stories, hot-water heat, 50′ x 110′.

Jackson, Miss. — A $75,000 court-house is to be built in Hinds County.

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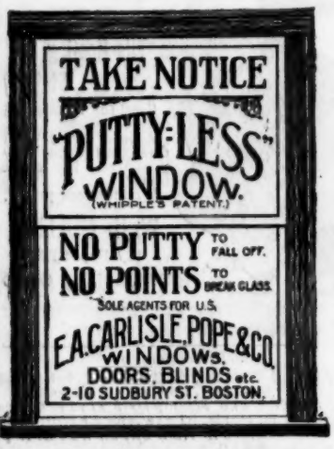

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["COLLEGE OF ARCHITECTURE, CORNELL UNIVERSITY," *Ithaca, N. Y.*]

I have looked over the plates of "*Topical Architecture*" and think the idea excellent.

ALEX. B. TROWBRIDGE,
Professor in Charge.

BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

Jacksonville, Fla.—Snelling & Potter, of New York City, are preparing plans for the St. John's Episcopal Church; estimated cost, $50,000.

Jewell, Ia.—C. C. Cross & Son, architects, Des Moines, have prepared plans for the ladies' dormitory to be built by the Lutherans, 40′ x 90′, brick, brick foundation, and steam heat; cost, $10,000.

Joplin, Mo.—Sketches for the new Federal building have been completed at the office of the Supervising Architect, Washington, D. C. The designs call for a $100,000 building, three stories high, and of the free Renaissance style of architecture.

Kent, O.—Report states that Andrew Carnegie has offered $10,000 for a public library.

Lakeland, Fla.—$10,000 in bonds will be issued for the erection of a public school building.

Lancaster, Pa.—A fine residence will be erected at this place for Bayard Thayer, Esq., from plans by Architect Guy Lowell, Tremont Building, Boston. Norcross Bros., builders, of Worcester.

Lansing, Mich.—Spier & Rohns, 825 Chamber of Commerce Building, Detroit, have made plans for a passenger depôt for Michigan Central Railroad and Pere Marquette Railroad, to be 36′ x 150′, one-story, built of field stone, Bedford limestone and paving brick, tile and slate roof, steam heating; cost, $25,000.

Madison, Wis.—The regents of the State University have taken steps toward the erection of the new building for the College of Agriculture, for which there is an appropriation of $150,000.

Martinsburg, W. Va.—The Presbyterians will build a new church to cost $16,000.

Millbury, Mass.—Architect John P. Kingston has completed plans for a modern residence to be erected here by the Methodist Episcopal Church Society. The building will be frame, 27′ x 38′. On the first floor are reception hall, parlor, dining-room, kitchen, pantry and the usual store-rooms. Carpentry and brick work will be done together; cost, $3,500.

Moline, Ill.—Andrew Carnegie has given $37,000 to this city for a public library.

Nashville, Tenn.—The new Jewish Synagogue, to be erected on Gay St., will cost about $15,000.

Newark, N. J.—Plans prepared by Chas. Alling Gifford, 763 Broad St., for the Y. M. C. A. building to be erected on Halsey St., call for a six-story structure, 85′ x 180′, the framework to be of steel with brick walls and fireproof partitions.

New Haven, Conn.—The contract for erecting the new high school on York Sq. has been awarded to the Geo. M. Grant Co., at $204,194.

The Aldermen have decided in favor of the construction of a contagious disease hospital at Springside; appropriation, $50,000.

New Sharon, Ia.—The C. E. Eastman Co., Des Moines, has completed plans for a $12,000 Masonic building at this place.

New York, N. Y.—N. C. Mellen, 27 W. 30th St., has prepared plans for a twenty-one-story office-building, 41′ 5″ x 114′ 7″, costing $550,000, to be built at the corner of William St. and Exchange Pl., for the Bank of the State of New York, of which Richard L. Edwards is president.

Welch, Smith & Provot, 11 E. 42d St., have won the competition for the plans of the new hospital which the French Benevolent Society will erect at 450 to 456 W. 34th St., on lot 83′ 4″ x 98′ 9″. The building will be seven story and basement, and fireproof throughout. The front will be of brick and limestone. The architects will start at once on the plans.

John J. Deery, Betz Building, Philadelphia, Pa., is preparing plans for the completion of St. Veronica's R. C. Church, the basement of which was completed some time ago; the size of the plot is 80′ 1″ x 95′, on Christopher St., near Washington.

Ortonville, Minn.—Fremont D. Orff, of Minneapolis, is said to be preparing plans for a $30,000 court-house.

Philadelphia, Pa.—William J. McShane has taken out a permit to build a new $56,000 church for St. Thomas Aquinas Catholic parish on the new site at the northwest corner of 17th and Morris Sts. The edifice will measure 81½′ x 166′, will be built of stone and will have two towers. Rev. M. J. Lawler, rector. Architect, Edwin F. Durang.

Philippi, W. Va.—It is stated that plans prepared by J. C. Fulton, of Uniontown, Pa., have been selected for the Barbour County Court-house; cost, about $50,000, including heating, lighting and plumbing.

Pine Bluff, Ark.—The Colored Masonic Grand Lodge, M. H. Clark, Grand Master, will erect a $25,000 temple in this city on a site already owned by them.

Pittsburgh, Pa.—The members of control have decided to erect a 12-room school in the 2d Ward west of N. Main Ave.

Plans have been prepared by Beveridge Webster, 237 Fourth Ave., for the Pittsburgh Conservatory of Music. It will be constructed of brick and stone, have a seating capacity of 500, and cost $50,000.

Redlands, Cal.—The Southern California Sanatorium Co. has been incorporated with a capital stock of $250,000, for the purpose of building a sanatorium, according to plans prepared by Hugh Todd, of Los Angeles.

Riceville, Ia.—Plans are being made by Fremont D. Orff, Lumber Exchange, Minneapolis, Minn., for a $20,000 two-story lodge and office building for the Odd Fellows.

Richmond, Va.—S. W. Fuller, New York City, has, it is stated, been awarded contract for erecting the $500,000 factory for the American Cigar Co., from plans by Lockwood, Green & Co., Boston, Mass.

Rockville, L. I., N. Y.—Morrell Smith, of Far Rockaway, has been engaged by the Board of Education to prepare plans for a school, to cost about $16,000.

San Antonio, Tex.—Reports state that the International & Great Northern Railway will build a

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(Advance Rumors Continued.)

$170,000 station. Leroy Trice, Palestine, general manager.

Saratoga, N. Y.—The Saratoga Polo Club proposes erecting a club-house and extensive stables.

Selma, Ala.—The Masons propose building a $25,000 structure, it is stated.

Somerville, Mass.—The contract for the erection of a 12-room school at Maple and Poplar Sts., has been awarded to George M. Davis, Son & Co., for $38,225.

Tallahassee, Fla.—Plans are being made by Frank P. Milburn, Columbia, S. C., for remodelling the State capitol. It will have steam heat, asphalt roof, cement and asphalt floors, cornices, skylights, metal ceilings, vaults, etc. The improvements will cost $100,000.

Taunton, Mass.—G. L. Smith is preparing plans for a three-story brick and stone structure for store and bakery purposes, 50′ x 80′, to be built on Washington St., and to cost $10,000. Owner, Quigley Bros.

Tyler, Tex.—A. J. Mood, architect for the International & Great Northern Railway, has prepared plans for a $10,000 depôt, to be built here.

Warren, R. I.—Albert H. Humes, Pawtucket, is preparing plans for an 8-room school-house; cost, $30,000.

Worcester, Mass.—Builder John Skelhorne has commenced work on the brick and stone apartment-house at 8 Newbury St., for Thomas Skelhorne. The building will be 42′ x 56′, five stories, and will be arranged for two families. John P. Kingston, architect. Cost, $20,000.

York, Pa.—Repairs and additions will be made to the York County jail; cost not to exceed $100,000.

APARTMENT-HOUSES.

Chicago, Ill.—*Houston Ave., Nos.* 9026-28, three-st'y bk. flats, 50′ x 67′; $15,000; o., Mrs. Bacon; a., Wm. R. Gibb; b., S. N. Nelson, 132 W. Erie St.

Michigan Ave., Nos. 5450-56, 2 three-st'y bk. & st. flats, 100′ x 141′; $110,000; o., E. Willoughby; a., C. Almquist; b., Henry Bernritter.

Kenmore Ave., Nos. 1705-7, three-st'y bk. & st. flats, 46′ x 57′; $15,000: o., F. W. Hess; a., J. J. Muldahl; b., Delfosse & Olson, 95 Washington St.

Rhodes Ave., Nos. 3646-48, three-st'y bk. & st. flats, 33′ x 80′; $20,000; o., F. P. Burkett; a., L. M. Mitchell; b., Charles Schleyer, 6919 Elizabeth St.

Cleveland, O.—*St. Clair St.*, nr. Murison St., three-st'y bk. store & flats; $50,000; o., The Perry Payne Co.; b., Henry Grant; a., W. R. Watterson.

Holyoke, Mass.—Three-st'y bk. apart.; $45,000; o., H. W. Cooley; b., T. F. O'Neill; a., W. B. Reid.

St. Paul, Minn.—*Dayton St.*, nr. Nelson Ave., three-st'y bk. & st. flats of 18 suites, 59′ x 100′; $50,000; o. & b., M. J. O'Neill and Carl Peterson; a., W. C. Whitney.

Laurel Ave., nr. Dale St., three-st'y & base. bk. & st. flats, 45′ x 60′, flat roof, steam; $17,500: o., E. M. and H. F. Ware; b., A. Linden, 112 E. 10th St.; a., J. W. Stevens.

St. Albans St. and Grand Ave., three-st'y bk. flat; $20,000; o., D. R. Bousopoulios; b., Thos. Brady, Selby Ave.; a., Louis Lockwood

Arundel St., nr. Dayton Ave., three-st'y & base. bk. flat, 35′ x 52′; $10,000; o. & b., Thos. Brady, Selby Ave.

HOUSES.

Boston, Mass.—*Patten St.*, Ward 23, 2 two-st'y fr. dwells., 26′ x 47′, pitch roofs, furnaces; $9,000; o.,

BUILDING INTELLIGENCE.

(Houses Continued.)

Chas. McDonald, Waverly; b., Alex. Frazer, Somerville.

Holmes Ave., nr. Geneva Ave., Ward 20, 2½-st'y fr. dwell., 26′ x 47′, pitch roof, furnace; $5,000; o. & b., Walter Bros., Quincy.

Savin Hill Ave., nr. Grampian Way, Ward 20, 2 two-st'y fr. dwells., 26′ x 47′, pitch roofs, furnaces; $9,000; o., Jos. Whalen; b., C. D. Rankin; a., Ernest N. Boyden.

Brown Ave., cor. Ashland St., Ward 23, two-st'y fr. dwell., 20′ x 24′, pitch roof, furnace; $2,000; o. & b., George Dame, Roslindale.

Cohassett, Mass.—Three-st'y fr. dwell., 29′ x 92′, pitch roof, hot air; $15,000; o., C. B. Bailey; b., F. A. Perkins; a., Geo. F. Newton, Boston.

Lancaster, Mass.—Two-st'y fr. dwell., 27′ x 46′, pitch roof, furnace; $6,000; o., E. L. Greene, Clinton; b., H. H. Lowe, Clinton.

Somerville, Mass.—*Pearson Road*, nr. Broadway, 2½-st'y fr. dwell., 28′ x 40′, pitch roof, furnace; $4,000; o., Chas. Teake; b., Wm. Brookes, 14 Mt. Pleasant St.

Lovell St., nr. Broadway, two-st'y fr. dwell., 26′ x 48′, pitch roof, furnace; $4,500; o., Martha A. Russell; b., D. E. Robbins, 10 Cameron Ave.

Worcester, Mass.—*Illinois St.*, three-st'y fr. dwell., 22′ x 48′; $3,000; o. & b., A. I. Fortier.

Francis St., three-st'y fr. dwell., 28′ x 52′; $3,500; o. & b., George W. Esmes.

Alpine St., three-st'y fr. dwell., 28′ x 62′; $4,500; o., Charles Sallgren; a., T. A. Peterson; b., F. A. Yates.

West St., three-st'y fr. dwell.; $6,000; o., J. W Roche; a., F. A. Lebeau; b., W. E. Putman.

OFFICE-BUILDINGS.

Birmingham, Ala.—*Twentieth St. and First Ave.*, ten-st'y bk. & st. office-building, 100′ x 100′, fireproof construction; $215,000; to be called the Woodward; a., Stone Bros., New Orleans, La., and W. C. Weston, associate.

STABLES.

Brooklyn, N. Y.—*Ocean Ave.*, cor. Voorhies Lane, 1½-st'y fr. stable, 22′ 6″ x 42′, shingle roof; $2,000; o., Coney Island Jockey Club, on premises; a., F. Clarke, on premises.

E. Third St., nr. Fort Hamilton Ave., one-st'y fr. stable, 20′ x 20′; $300; o., Ida Mark, 93 E. 3d St.; a., J. S. Kennedy, 44 Court St.

Everett, Mass.—*Broadway*, 1½-st'y fr. stable, 20′ x 37′; $2,000; o., I. A. Evans; b., E. L. Goudy; a., George Moffette, Boston.

Hartford, Conn.—*At Needham's Corner*, three-st'y iron fireproof stable, 32′ x 145′, containing 49 plain and 8 box-stalls, modern fittings; $14,000; o., Col. Wm. Donohue & Co.; not let.

Jamestown, R. I.—1½-st'y fr. stable, 38′ x 74′, pitch roof; $5,000; o., N. S. Woodward; a., J. D. Johnston, Newport; day-work.

Milwaukee, Wis.—*Prospect Ave. and Albion St.*, bk. & st. stable, 22′ x 42′; $2,000; o., Miss E. M. Black; b., Pat'k Dunn, mason, J. Debbink, carpenter; a., Alex. C. Eschweiler.

New York, N. Y.—*E. Seventieth St., Nos.* 168-172, three-st'y bk. stable & dwell., 57′ 7″ x 90′ 5″ & 100′ 5″, concrete & metal roof; $85,000; o., D. G. Reid, New Netherland Hotel; a., C. P. H. Gilbert, 1123 Broadway; gen'l c., Deeves & Son, Broadway & Duane St.

One Hundred and Fifty-fifth St., nr. St. Nicholas Ave., two-st'y bk. stable, 36′ x 84′; $12,000; o., Chas.

BUILDING INTELLIGENCE.

(Stables Continued.)

A. Peabody, 2 Wall St.; a., Clarence L. Sefert, 233 W. 120th St.; b., John I. Downey, 410 W. 34th St.

One Hundred and Seventy-sixth St., nr. Morris Ave., 1½-st'y fr. stable, 16′ x 26′, shingle roof; $600; o., Alex Wilson, 456 E. 176th St.; a., Wm. H. Hopkins, 1030 E. 169th St.

COMPETITIONS.

SCHOOL-HOUSE. [At Boise City, Idaho.]
It is stated that plans and specifications are wanted for the high school. GEO. H. STEWART, Vice-pres. of the Bd. of Trustees, Independent School District. 1342

COURT-HOUSE. [At Jacksonville, Fla.]
Local press reports state that the Board of County Commissioners will receive until September 15 preliminary sketches of ground plans and elevations for a two-story court-house, 50′ x 145′, to be erected in Jacksonville. Cost not to exceed $70,000. R. B. ARCHIBALD, Chmn. Bd. 1342

BUILDING. [At Jacksonville, Fla.]
Plans and specifications are wanted by the Board of Public Works until September 30 for the erection of a modern municipal building. PHILIP PRIOLEAU, City Engr. 1343

PROPOSALS.

PLUMBING, ETC. [At Macomb, Ill.]
C. J. Searle, president board of trustees, Western Illinois State Normal School, Macomb, Ill., will receive bids until September 20 for all the work embraced in the specifications for the power plant, and in the plans for the sewerage, plumbing and gas-fitting in connection with construction of the school building at Macomb, in accordance with plans by Robert Bruce Watson, 1802 Fisher Building, Chicago. 1342

Treasury Department, Office Supervising Architect, Washington, D. C., September 4th, 1901. Sealed proposals will be received at this office until 2 o'clock P. M. on the 24th day of September, 1901, and then opened, for the installation of a conduit and wiring system for the U. S. Post-office building at Carrollton, Ky., in accordance with the drawings and specification, copies of which may be obtained at this office or at the office of the Superintendent of Construction at Carrollton, Ky., at the discretion of

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PROPOSALS.

the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. 1343

Treasury Department, Office Supervising Architect, Washington, D. C., September 5th, 1901. Sealed proposals will be received at this office until 2 o'clock P. M. on the 10th day of October, 1901, and then opened, for the construction (except heating apparatus, electric wiring and conduits) of the U. S. Post-office and Court-house at Elmira, N. Y., in accordance with the drawings and specification, copies of which may be had at this office or at the office of the Postmaster at Elmira, N. Y., at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. 1343

Treasury Department, Office of the Supervising Architect, Washington, D. C., September 9, 1901. Sealed proposals will be received at this office until 2 o'clock P. M. on the 30th day of September, 1901, and then opened, for furnishing the heating apparatus complete in place for the U. S. Post-office at Carrollton, Ky., in accordance with the drawings and specification, copies of which may be had at this office or at the office of the Superintendent at Carrollton, Ky., at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. 1343

Treasury Department, Office of the Supervising Architect, Washington, D. C., September, 10, 1901. Sealed proposals will be received at this office until 2 o'clock P. M., on the 1st day of October, 1901, and then opened, for furnishing the plaster models required for the U. S. Post-office, Court-house, etc., at San Francisco, Cal., to be made in Washington, D. C., in accordance with drawings and specification, copies of which may be had upon application at this office, or the office of the Superintendent at San Francisco, California, at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. 1343

CONSTRUCTION.

[At New York, N. Y.]

Bids are wanted September 28 for constructing a three-story and basement brick and steel fireproof building about 80′ x 200′ at the N. Y. Navy Yard. MORDECAI T. ENDICOTT, Ch. of the Bureau of Yards and Docks, Navy Dept., Washington, D. C. 1343

CONSTRUCTION.

[At Sullivan's Island, S. C.]

Bids are wanted September 28 for constructing one barrack and one administration building. DAVID PRICE, Q. M. 1313

JAIL.

[At Nashville, Ga.]

It is stated that bids will be received until October 15 for erecting a two-story brick fireproof jail. Plans on file with the Clerk of Superior Court. 1343

COURT-HOUSE.

[At Ortonville, Minn.]

Bids for construction of a court-house for Big Stone County are wanted until September 25th, 1901. H. L. ZWIENER, county auditor, Big Stone, Minn. 1343

BARRACK.

[At Boston, Mass.]

Depot Quartermaster's office, 170 Summer St., Boston, Mass. Sealed proposals, in triplicate, will be received at this office until 11 o'clock A. M. September 20, 1901, and then opened in the presence of attending bidders, for constructing at Fort Standish, Boston Harbor, Mass., one frame barrack. Blank forms and information furnished on application. Plans and specifications on file in this office. Envelopes containing proposals to be marked "Proposals for Construction of Public Building, Fort Standish, Mass.," and addressed to A. M. PALMER, depôt quartermaster. 1342

CONSTRUCTION.

[At Boston, Mass.]

Sealed proposals, indorsed "Proposals for Extension of Building 40," will be received at the bureau of yards and docks, Navy Department, Washington, until 1 o'clock September 28, 1901, and then and there publicly opened for constructing an extension of a rolling mill, including new roof for old building at the navy yard, Boston, Mass. Appropriation, $98,000. Plans and specifications can be seen at

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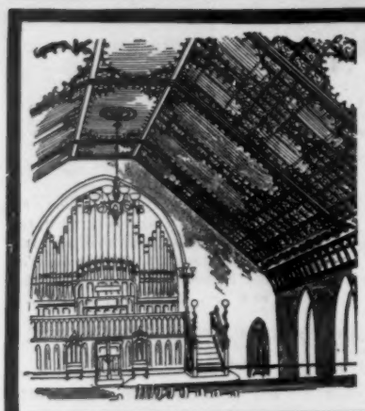

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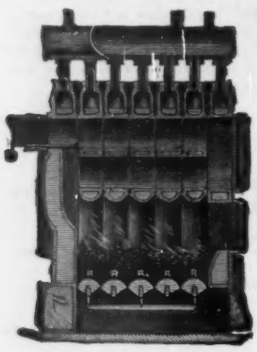

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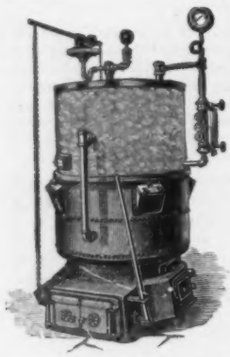

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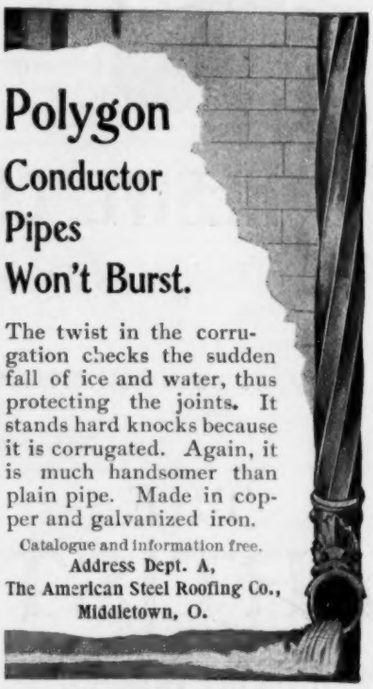

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